AIR CONDITIONING & REFRIGERATION NEWS
The Newspaper of the Industry
Subscription Price, $6 Per Year Vol. 82, No. 15, Serial No. 1,516 April 14, 1958
Issued every Monday at 450 West Fort St., Detroit 26, Michigan
Established 1926
Member, Associated Business Publications ABP ABC Member, Audit Bureau of Circulations
Reentered as second class matter October 3, 1936 at the post office at Detroit, Mich., under the Act of March 3, 1879. Trade Mark Registered U. S. Patent Office. Copyright 1958, by Business News Publishing Co.

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Mr. Fan: Greetings!
Coming Through with Rye
Youth Movements
Here's One for Ripley
Fast Fielding
Golden Moment of Memory
Box Score Footnotes
Pennant Race Predictions

Mr. Fan: Greetings!

Any major league baseball team could use a man who fields every position superbly, never strikes out, and seldom makes an error.

But there's no method known to make him lay down his hot dog, come out of the grandstand, and make good his boasts and challenges. And here it is, the beginning of another Major League season!

Following anecdotes are dedicated to subscribers (and there are many thousands, we've learned) who are devoted to baseball.

Coming Through with Rye

Ever heard of Gene Rye? Bet not. Yet, the poorly publicized Rye was instrumental in establishing a staggering set of records.

All the following happened in the Texas League on the night of Aug. 6, 1930. Waco (Gene's team) met up with Beaumont. Rye led off in the eighth inning, and hit the second pitch over the right field fence.

Thereupon a walk, a single, and another walk filled the bases, and brought in another pitcher. This fellow couldn't get anybody out and was relieved. The first batter who faced the new boy was Rye.

Two of Rye's teammates were waiting to be driven home. Rye accommodated them by hitting his second home run of the inning over the rightfield fence.

Waco batted around, and Rye came up again, this time with the bases packed. Boom! A third homer. In the press box savants thumbed through record books. They found he had established the following marks:

Most home runs in one inning —3.

Most extra-base hits in one inning—3.

Most total bases in one inning —12.

Most runs batted in one inning —8.

He also tied a few records, namely:

At bat most times in one inning—3. (He shared this with 14 other players.)

(Continued on Page 18, Col. 1)

Lists Room Unit B.t.u.h. Ratings

* * *

York Questions 3 Units, Tests Show 'Overrated'

YORK, Pa.—The York Corp., subsidiary of the Borg-Warner Corp., after viewing the published ratings on room air conditioners which were published in AIR CONDITIONING & REFRIGERATION NEWS specifications data, along with the latest officials' rating as published by the Air-Conditioning & Refrigeration Institute, is undertaking a test program of competitive units where ratings seem to be "out of line."

Preliminary tests have already revealed on three competitive models that these models have been overrated, the company states.

York said it will submit its test program findings to the ARI consistent with the procedure established by the association for a protest on the published ratings of room air conditioners which have been rated under the standard test conditions established by ARI and its member companies. It said that many of the ratings which appeared in the NEWS were different from the ratings which have been published by ARI for identical models, and that such discrepancies were one of the reasons why the testing program was undertaken.

Can Visit Western Show 1-9 p.m. Daily

LOS ANGELES—Show hours of 1 p.m. to 9 p.m. daily starting Wednesday, May 7 and continuing through Sunday, May 11 will afford plenty of time for those attending the Western Air Conditioning, Heating Ventilating, and Refrigeration Exhibit to view the exhibits at Shrine Exposition Hall here, it is pointed out by Western Air Conditioning Industries Association, sponsor of the Show.

The products of some 150 manufacturers will be shown in the various exhibit spaces at the Show, the committee reports. In some instances, the products of a number of manufacturers will be combined in a single exhibitor showing. Several new exhibitors have signed up since late in March,

(Concluded on Page 31, Col. 1)

Senators To Confer On 'Bid Shop' Bill

WASHINGTON, D. C.—Whether the so-called "anti-bid shopping" bill, H.R. 7168, will be re-referred to the Senate Judiciary Committee for the purpose of holding Senate hearings is questionable, Sen. John L. McClellan, Arkansas Democrat and member of the committee, indicated to the NEWS.

Sen. Hubert Humphrey, Minnesota Democrat, had earlier suggested such a re-referral to

(Concluded on Page 49, Col. 3)

ARI Has Mfrs. Ratings Under 110-58 Standard

* * *

WASHINGTON, D. C.—First listing of 1958 model room air conditioner ratings have been released by the Air-Conditioning & Refrigeration Institute. Ratings are based on the reports of 24 manufacturers and stated in terms of British thermal units per hours (B.t.u.h.) of cooling capacity.

ARI had planned to make the first 1958 release on capacity ratings last month, but a revision of ARI Standard 110, under which the units are tested and rated, was being prepared, and this led to deferment of the issuance of the rating list until the new Standard 110-58 had been approved and was ready for printing.

The 1958 ratings make no reference to "horsepower" which formerly was used to designate size of room coolers. This term

(Continued on Page 22, Col. 1)

Contractors Protest Fla. UA Locals' Merger

MIAMI, Fla. — A proposed merger of two local unions of the United Association here, one of which has a contract with Air Conditioning & Refrigerating Association of Florida, Inc., and the other being the plumbers union, has brought about a vigorous protest from the contractor group.

An election is scheduled April 22 with members of UA local 725, consisting of journeymen doing air conditioning and refrigeration work, and UA local 519, comprised of journeymen plumbers, voting on a merger proposal.

ACRA of Florida, Inc. is opposing the move, and has taken the matter up with United Association officials at the national level. Representatives of Refrigeration & Air Condition-

(Concluded on Page 49, Col. 4)

Office Bldg. Air Conditioning

Owner, Architect, Engineer, Contractor Discuss Who's Responsible for Success of System

By C. Dale Mericle

FORT WORTH, Texas—Who is responsible for ensuring that the air conditioning system installed in an office building proves satisfactory—the owner, architect, consulting engineer, or contractor?

Frank views of these four were aired in a lively panel discussion staged recently by the Fort Worth chapter of American Society of Heating & Air-Conditioning Engineers in this city.

Panelists were Calvin Luper, manager of Life of America Bldg.; Robert P. Woltz, Jr., architect; Peter E. Love, consulting engineer; and D. E. Beals of Beals Plumbing & Heating Co., mechanical contractor. C. Rollins Gardner was moderator.

"We're interested in getting as much floor space as possible and taking up as little space as possible with mechanical equipment," Luper reminded the group, pointing out that office

(Concluded on Page 27, Col. 1)

Itinerary for Inside Dope's "Around the World In 50 Days"

Thanks to the Australian Institute of Refrigeration, which is subsidizing Editor-Publisher George Taubeneck's lectures in Australia, "Inside Dope" will visit Air Conditioning & Refrigeration News subscribers all around the world from late April through early June.

Following is a tentative itinerary for his "Around the World In 50 Days" reporting journey. Subscribers in the cities and nearby areas listed, please note. "Inside Dope" would like to interview you.

April 21-25	San Francisco, Honolulu
April 27-30	Melbourne, Adelaide in Australia
May 1-11	Sydney Australia. (Address Box 4962, G.P.O., Sydney)
May 12-14	Singapore
May 15-16	Bangkok
May 17-21	Karachi, Bahrein, Beirut
May 21-24	Istanbul, Athens
May 25-28	Rome, Barcelona
May 29-June 6	Paris, Brussels, Frankfurt, Copenhagen.
June 7-10	London, New York City (London address: Cumberland hotel.)

Inasmuch as exact dates for arrivals in cities from Singapore to Paris are impossible to predict at this time, subscribers are advised to expect Taubeneck's arrival either two days before or after the days scheduled above.

Status of G-E's Air Conditioner Dept. Altered

Part of Appliance Div.; Salmonsen Is Manager Distribution Unchanged

NEW YORK CITY—In an organizational shift designed to "increase our effectiveness in the air conditioning industry" the General Electric Co. has realigned the business personnel and facilities of its former air conditioning division into an operating department of the company's appliance and television receiver division.

"General Electric confidently looks forward to a steadily growing air conditioning industry," said James H. Goss, vice president and group executive of the company's Consumer Products Group in making the announcement. "The realignment is intended specifically to increase General Electric's effectiveness in the industry and to strengthen communications with this department's independent distributors."

Goss emphasized that no changes in G-E's air conditioning distribution channels are contemplated.

Carl A. Salmonsen has been named general manager of the G-E air conditioning department, it was announced by C.

(Concluded on Page 49, Col. 3)

U.S. Court Restrains SMW Burt Boycott

CLEVELAND—Federal court here issued a temporary order restraining the Sheet Metal Workers Union from continuing a 13-year boycott of ventilating equipment made by Burt Mfg. Co. of Akron, Ohio.

Judge Paul C. Weick ruled last week that the union's refusal to handle equipment made by a rival union is a secondary boycott and violation of the Taft-Hartley law.

Burt's 110 employes are rep-

(Concluded on Page 49, Col. 3)

Name Beisber Head Of Lonergan Div.

CHICAGO—M. F. Beisber has been named president of Lonergan Coolerator Div., McGraw-Edison Co. He has been market research and distribution director for the parent firm's Line Material Industries in Milwaukee.

Beisber succeeds S. J. Lonergan, Sr., founder of the Albion, Mich. company, who recently resigned in a policy dispute with the parent firm officials. His two sons, S. J., Jr., and John R., vice presidents, and D. W. Russler, divisional controller, also resigned.

Dependable Prescription for Refrigeration & Air Conditioning Equipment

Rx Always Specify READING Copper Tubing

Made by Copper Tube SPECIALISTS

READING TUBE CORPORATION
EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA

IN THIS ISSUE

RESIDENTIAL *(Air Conditioning)*

Can Solar Radiation Economically Supplement Heat Pump In Ranch Style Home? 36

"Privazone" House Offers Zoned Heating, Cooling To Promote Family's Health, Comfort.. 37

COMMERCIAL *(Air Conditioning)*

NEWS Survey Finds Most Cooling Dealers Make a Fair Profit or "Pass Up" Job..... 28

Low Velocity Air Drops Off at Edge of Ticket Window To Keep Cooling In Office..... 8

INDUSTRIAL *(Air Conditioning)*

19-Story Office Building Uses Cellular "Honeycomb-Like" Steel Decks for Air Distribution 42

Slime, Algae Control

Drain, Flush, Clean Equipment Thoroughly; Add Slimicide, Chief Chemist Advises..... 10

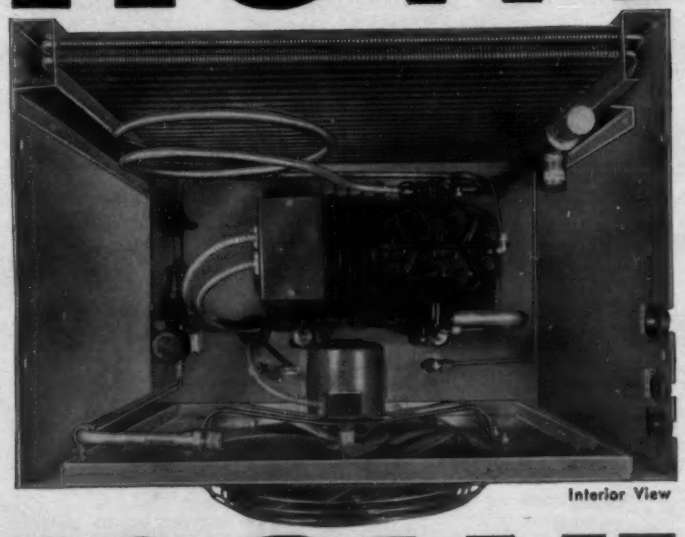
Better Management

Contractor's Banking Relations, Insurance, Credit Policies Are Key To Success..... 16

Room Air Conditioner Ratings

ARI Publishes Ratings on 24 Makes..... 22

new!



Interior View

new!

new!

KRAMER

THERMOBANK COMPRESSOR

FACTORY PACKAGED at LOW COST!

Kramer's new THERMOBANK COMPRESSOR overcomes the problems and uncertainties in field assembly of low temperature refrigeration systems. It's the only factory-assembled-and-tested automatic defrost system and includes a hermetic compressor, THERMOBANK re-evaporator and all controls. It arrives on the job ready to operate. Only simple connection to the Kramer evaporator is required and nearly all adjustments are eliminated. THERMOBANK COMPRESSOR uses an extra large air-cooled condenser and a high efficiency low temperature compressor—possible only with THERMOBANK—for maximum capacity at lowest cost. Tamper-proof aluminum case provides easy access to all components and maximum installation adaptability in any unconfined area. Units available on request for outdoor installation are designed for automatic trouble-free operation for any outside temperature.

WRITE FOR BULLETIN TC-406

KRAMER TRENTON CO. • Trenton 5, N.J.

44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Milwaukee Cooling Water Charge To Be Restudied

MILWAUKEE—Still battling over imposition of a $10 a ton charge for air conditioning units over 3 tons which do not have water conserving devices, common council here referred the proposed ordinance back to the utilities committee.

Representatives of the local chapter Wisconsin Restaurant Association and Milwaukee Building Owners and Managers Association had appeared in protest, so council scheduled the bill for further hearings.

Common council members disagreed as to whether a public service commission order authorizing the fee was mandatory or permissive. The city attorney has been asked to rule on the question.

A short time ago the utilities committee had reported out the ordinance recommending passage. However, a spokesman for the restaurateurs said the charge would be "unjust to the people in our business who are compelled to have air conditioning."

The measure is designed to discourage use of air conditioning units that require large volumes of water during hot weather without reuse when other demands are also high.

Weber '57 Net Drops

LOS ANGELES — Weber Showcase & Fixture Co. reported total net income for last year of $83,308, or 14 cents a share after preferred dividends as compared to net profits of $304,908, or 65 cents a share in 1956.

Net sales for 1957 reached $30,375,852, compared to $27,235,019 the year before, an increase of 11.5%.

Adds Dehumidifier to Line

RIPON, Wis. — Speed Queen Div., McGraw-Edison Co., has added a dehumidifier to its line, a company spokesman said.

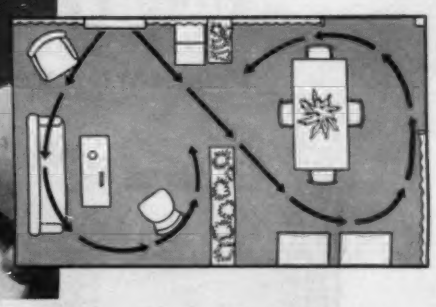
Known as the "Speed Queen" space drier, the new dehumidifier is being produced by Coolerator Div. at Albion, Mich. It has an automatic humidistat control.

Mark of Styling Craftsmanship — Mark of Engineering Leadership

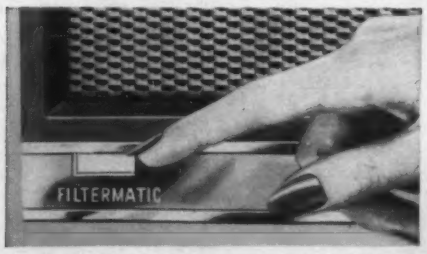
ONLY KELVINATOR GIVES YOU THESE TWO GREAT NEW ROOM AIR CONDITIONER FEATURES TO SELL!

1. Two-Directional Cooling! 2. Filtermatic Signal!

IT'S SO EASY TO DEMONSTRATE Two-Directional Cooling. Cool air can be directed left or right, up or down . . . or left and right and up and down all at once. Simply flick the control knobs that operate the two sets of vertical and two sets of horizontal louvers and your prospects can feel the difference. And when they do, you'll feel the difference in sales!



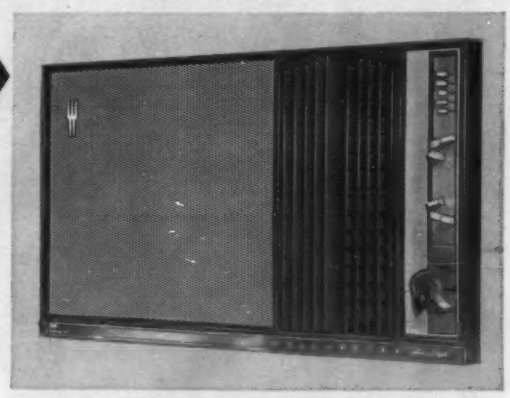
NEW 1958 1 H.P. KELVINATOR COOLS 2 ROOMS! New Kelvinator Two-Directional Cooling gives you the biggest customer-convincer in the room air conditioner business. And only Kelvinator has it! Yes, only Kelvinator lets you put the cold air where you need it when you need it. Kelvinator gives you the capacity and air flow control to channel cool, clean, refreshing air into two rooms at the same time.



NEW FILTERMATIC SIGNAL SHOWS RED when filter becomes dirty and needs replacing. As long as Kelvinator's exclusive Filtermatic Signal stays white, the filter is clean and the user is getting full cooling capacity. A sales-making demonstration!

6 ALL NEW 1958 "THIN-STYLE" MODELS—So compact—so narrow they fit into 27-inch openings . . . in the window, or through the wall. All have that sheer beauty and subtle elegance you get only with Kelvinator's new "Style Mark" design. Lovely Polar Grey and harmonious Twilight Grey are dominant colors. Entire finish is of highest quality for lasting loveliness.

Model	Current	Compressor
RH-1041	12 amp., 115 volt	1 H.P.
RH-1061	7½ amp., 115 volt	1 H.P.
RH-1081	12 amp., 115 volt	1 H.P.
RH-1082	230 volt	1 H.P.
RH-1581	12 amp., 115 volt	1½ H.P.
RH-2082	230 volt	2 H.P.



BUDGET LEADER BUILDS TRAFFIC with Kelvinator's new 1 H.P. "Challenger" model at a down-to-earth price. A big capacity, 12 amp., 115-volt unit housed in the compact "Thin-Style" cabinet. Quality features include: Adjustable thermostat, simple dial controls, adjustable air directional louvers, replaceable filter.

"MASTERPIECE" UNIT to the right has 2 H.P., big capacity for cooling large areas, small shops.

CASEMENT WINDOW UNIT also available—1 H.P., only 7½ amps., installs on any adequate 115-volt circuit.

Kelvinator OLDEST MAKER OF ELECTRIC REFRIGERATORS FOR THE HOME

DIVISION OF AMERICAN MOTORS CORP., DETROIT 32, MICHIGAN

American Motors Means More for Americans — Live Better Electrically

REFRIGERATORS • WASHERS • DRYERS • ELECTRIC RANGES • FREEZERS • ROOM AIR CONDITIONERS

New England Company To Build 8 to 75 Ton Cooling Towers

WEST CONCORD, Mass.—A new company to design and produce water cooling towers for use with commercial and industrial air conditioning systems has been organized in New England.

Mason Products, Inc. will maintain general offices at 317A Main St. here. Cooling towers ranging in capacities from 8 to 75 tons are now in production.

The new company is headed by Paul H. Mason, a registered professional engineer. He previously was sales manager for Phillips Cooling Tower Co., Brooklyn, and prior to that was a mechanical engineer for Foster Wheeler Corp., New York City.

A graduate of the University of New Hampshire with a B.S. in mechanical engineering as well as the U. S. Merchant Marine Academy, Mason is a member of the American Society of Heating & Air-Conditioning Engineers.

He said that Mason Products plans to produce a line of cooling towers "specifically designed to meet climatic conditions presented in this area," and that "our plans call for a gradual broadening of the line if market conditions permit."

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzales—25¢ each.

Mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Bohn Names Money To Head Styling

DETROIT — R. C. Aylward, general sales manager of Bohn Aluminum & Brass Corp., has announced the appointment of R. H. Money as executive staff engineer, assigned to Bohn's Appliance Div. located in this city.

Money will be responsible for consultation on styling and engineering applications in the appliance field, the sales official said.

A former president of the American Society of Refrigerating Engineers, Money has been identified with the refrigeration and air conditioning industry for the past 27 years. He holds several trade patents and has contributed many processes and techniques to the air conditioning and refrigeration fields, it was noted by the sales executive.

Down Payments Halted on GI Home Loans, Improvement Loans Eased To Pep Building

WASHINGTON, D. C.—President Eisenhower removed down payment requirements on Veterans Administration-guaranteed home loans in a new move to pep up home building and combat the recession.

Also the Federal Housing Administration announced a reduction in its insurance premium charge to lenders on home modernization loans to help "stimulate lenders to make more money available for home remodeling repair."

NEED PAY ONLY CLOSING COSTS

The President's action with regard to VA-backed loans ends the 2% down payment requirement and now home buyers under the GI home loan program need only pay closing costs on a house. (This could run to several hundred dollars).

Assistant Commissioner Roy Cooke of FHA stated home modernization loans which formerly carried a rate of 0.55% will now have a rate of 0.50%. This is the premium the lender pays for insurance on home repair and modernization loans.

He also said the period during which FHA will pay interest on loans in default is being extended to nine from six months. This is the third time Title I—home improvement loan—premium charge has been cut from the October, 1954 rate of 0.75%. Under this program any homeowner can get a five-year loan of up to $3,500 from any approved lending institution to make improvements.

OTHER ACTIONS TAKEN

Other actions by the President to carry out the new housing law he signed two weeks ago include:

Releasing immediately $300 million of the $1 billion provided in the new law for Federal National Mortgage Association to buy at par mortgages backed by VA or FHA on low and medium priced homes.

Freeing another $325 million for FNMA to buy under its special assistance function mortgages on armed services housing, homes for the elderly, and urban renewal housing.

Two other actions were taken earlier: Lowering the down payments on FHA-insured loans and elimination of discount controls on FHA and VA-backed mortgages.

The President also said the VA has put into effect its new interest ceiling of 4¾%, raising it from 4½%, and reported FHA has set a new interest ceiling on the military housing mortgages it insures of 4¼%.

Housing Administrator Cole said the new program would help boost the total number of new homes built this year over the 1957 level. He predicted that about 1.1 million new homes will be built this year and that 150,000 of them might be attributable to the new law.

Asks FHA Only Include 'Lasting' Home Items

PHILADELPHIA — National Foundation of Consumer Credit has adopted a resolution calling for exclusion of items from Federal Housing Administration mortgages "unless they are of relatively permanent character and lasting quality, not subject to frequent repair and replacement."

Resolution reads in part: "The length of time extended should be limited to the reasonable life of the goods giving rise to the credit, so payment will be completed before it becomes necessary to buy a replacement.

"Extension," it continued, "of FHA mortgages to include certain short-lived items has sometimes violated the principles (of good consumer credit) and there appears to be inadequate control over this situation."

ALCO'S famous 402

THERMO® VALVES

THE SMALL-FIXTURE VALVE FOR ALL FIXTURES

Actual Size

These are your benefits:

√ LIQUID CHARGED—Install in any position.

√ BUILT-IN PRESSURE LIMITING ELEMENT—Prevents motor overload and motor burn-out.

√ WIDE RANGE SUPERHEAT ADJUSTMENT—2 to 20°F—Easy External adjustment fits Standard Service Wrench.

√ REVERSE SEATING—Assures smooth feed at all loads.

√ RUGGED CONSTRUCTION—Brass, Bronze and Stainless Steel.

√ REMOVABLE STRAINER—At inlet—Easy to clean.

√ CAPILLARY AT SIDE—Allows more head room for mounting.

FIELD PROVEN MODELS FOR ALL THESE CAPACITIES:
FREON-12 • 1/4, 1/2 and 1 Ton
FREON-22 • 1/2, 3/4 and 1-1/2 Tons
METHYL CHLORIDE • 1/2, 1 and 2 Tons

√√ IF THERE'S ROOM FOR YOUR HAND... THERE'S ROOM FOR AN ALCO 402

Call your Alco wholesaler — Write for Specifications Bulletin No. 402.

• BUY SECURITY
• BUY QUALITY
• BUY ALCO

ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.

7804

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

Home Air Conditioning School Offered Basic 'Know How'

DETROIT — Something "different" in the way of a "school" for residential air conditioning dealers and contractors was put on here recently by Air Con, Inc., distributor for Armstrong Furnace Co.

With Robert Watkins, district representative for Armstrong in charge of the meetings, classes were held for four straight week nights from 7:30 to 10:30 p.m. at the Rackham building. The meeting was "different" from the usual distributor or educational meeting, says Watkins, in the following respects:

1. It was not limited to dealers handling the Armstrong line, but was open to any retail outlet with an interest in residential air conditioning.

2. There was no effort made to emphasize the features of the Armstrong line. Instead, emphasis was placed on giving the dealers the picture on the possibilities in residential air conditioning, and the kind of "know how" and technical fundamentals that would be needed to operate properly in this field.

("What we tried to impress upon them," said Watkins, "was to either get into the business in the right way, or not at all, so that they wouldn't muddy up the waters for the good operators.")

3. While some basic technical information was presented at the meetings, the primary effort along this line was to get the dealer to take the proper steps to educate himself and his men. Those in charge of the meeting pointed out the proper steps to be taken, and described the kind of books, manuals, magazines, and other material that is available for "self-educational" purposes.

4. Representative of makers of such components as controls, cooling towers, and refrigerant valves were invited to discuss the part these products play in air conditioning installations, and to distribute informative literature about the devices.

5. A representative of the Department of Safety Engineering of the city of Detroit was present to discuss the provisions of the Safety and Licensing Code. Those attending who operate within the city of Detroit proper studied the code provisions with the idea of being prepared for the examination for a limited license if they did not already have the same. Those from outlying areas were urged to get their municipalities to agree to a reciprocal arrangement with Detroit on the matter of the code.

6. Special attention was given to the manpower requirements for an air conditioning contractor, and the kind of knowledge such manpower would need, and the availability of such workers.

Nearly 200 members of the industry showed up for the first night's session, said Watkins, and most of them stayed through the 4-night school.

A study of the results of the school is being made by Blaine Lytle, sales manager for Air Con, Inc., and it is possible that another school may be held this spring.

2 Electric Motor Mfrs. To Merge

HOWELL, Mich. — Planned merger between a local electric motor manufacturer and a Cleveland oil-burner motor producer has been announced.

Surviving name will be Howell Electric Motors Co. when Howell and Ohio Electric Mfg. Co. combine, it was indicated. Motives for the merger are said to be "substantial economies in operating costs" and a "stronger market position."

A. C. Flood, Howell president, and Chester Bland, head of the Cleveland firm, said terms have been agreed on and now await approval by stockholders of both.

Howell will contribute about 52% of the new combined sales volume of $12 million and more than $3 million of the combined $5 million in assets. Flood will carry over as president and Bland will become board chairman of the merged companies.

Flood promised all Howell's 500 employes that "all plants of the two firms will continue to operate." There is a plant here while Ohio Electric has a division in Lima, Ohio and a subsidiary in N. Plainfield, N. J.

Marsh Talks to ASHAE Unit

SYRACUSE, N. Y.—The Central New York Chapter of American Society of Heating & Air-Conditioning Engineers held its March meeting here with Zeph Marsh, sales manager for schools, Minneapolis-Honeywell Regulator Co., as its guest speaker.

Firm Changes Name

BATON ROUGE, La. — Refrigeration Sales Engineering Corp. here has filed a charter amendment with Secretary of State Martin changing the corporate name of the firm to Climatrol, Inc.

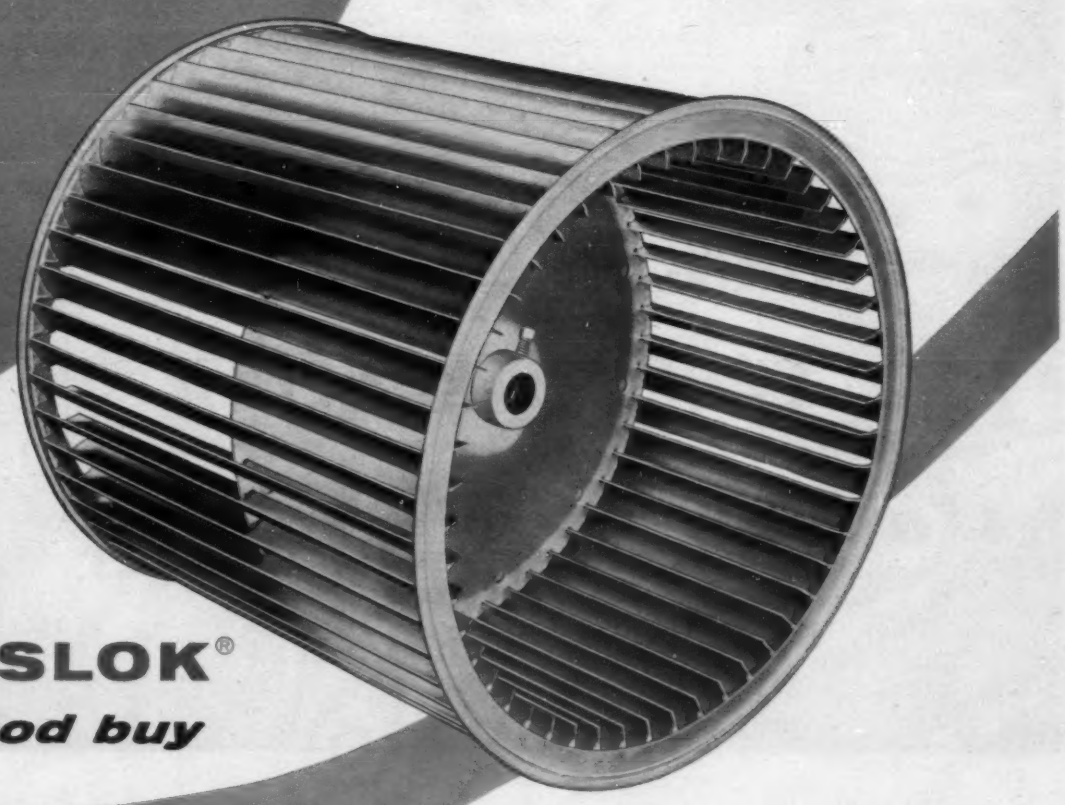
Thinking of —

- **changing territories**
- **expanding your territory**
- **taking on new lines—**

Check the CLASSIFIED ADS

Your opportunity may be there.

ALL WORK ***and no play***



MAKES PRESLOK® *a good buy*

Circumference of both center discs is key-hole punched to accommodate blade aperture.

Blades are punched to leave strong metal support between aperture and blade edge.

Two fingers on each center disc slip into blade aperture and are pressed together in locking position.

Exclusive LAU locking method eliminates blade play at high speeds, cuts blower noise

LAU Preslok construction (so exclusive it's patented) eliminates the problems inherent in high RPM operation—blade play, bowing, and noisy operation. Why? Because Preslok construction gives both center discs a total of four positive mechanical grips on each blade. It works so well that we guarantee increased operating speed maximums of at least 50% over previous wheels, size for size.

Preslok wheels are available from factory stock in 9 sizes from 9 thru 18 inches. Isn't it time you checked into Preslok—and LAU Blowers? LAU BLOWER COMPANY, 2027 Home Ave., Dayton 7, Ohio. *Other plants* at Irwindale, California and Kitchener, Ontario.

Here's the man to call...

Cincinnati 30, Ohio
Don G. Jensen
6422 Glade Avenue

Cleveland 24, Ohio
Charles C. Miley
1561 Woodrow Avenue

Cranford, New Jersey
E. C. Wolford
11 English Village

Dearborn, Michigan
J. B. Wallace
9 Byfield Lane

Denver 2, Colorado
Ben T. Clark
1421 Court Place

Elmwood Park 35, Illinois
William J. Lohrey
2047 77th Avenue

Kansas City 14, Missouri
Charles L. Sigman
8906 Holly Avenue

Pasadena 8, California
G. R. Mergenthaler
495 Cliff Drive

Prairie Village 15, Kansas
Victor Stewart
7112 Buena Vista

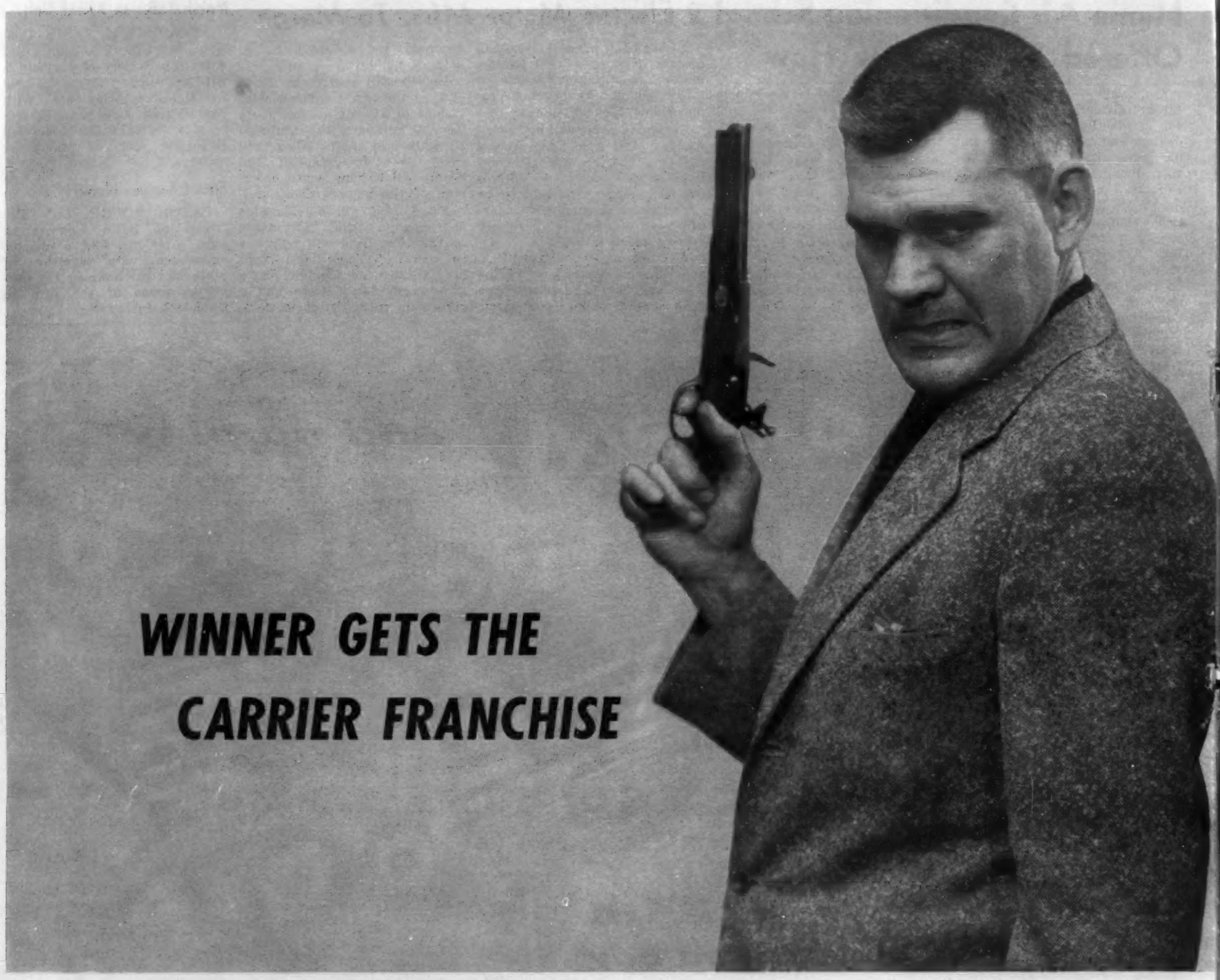
Seattle 55, Washington
William M. Peistrup
19246 Lago Place

Syracuse, New York
Henry Seebach
560 Allen Street

York, Pennsylvania
E. F. Humphrey
327 Lambeth Drive

LAU®

The BIG Wheel in air moving



A multi-million-dollar research program brings an unending parade of exciting new products to the Carrier dealer

THIS MONTH CARRIER INTRODUCES A GAS-FIRED FURNACE THE NEW WINTER WEATHERMAKER

Ten good reasons why the Carrier franchise is the most valued in the industry

1. A Carrier dealer gets engineering help from his distributor on difficult jobs. His distributor knows the air conditioning business and he understands dealer problems.
2. A Carrier dealer receives continuous training in the most modern techniques for air conditioning engineering, selling, installing and servicing.
3. A Carrier dealer can obtain expert management consultation on any phase of his business operation. Assistance in accounting, financing, inventory control, personnel compensations, etc.
4. A Carrier dealer doesn't have to tie up his own capital in inventory. Under a special Douglas Guardian Warehouse Plan he enjoys the benefit of having the equipment he needs on hand and yet he pays nothing, not even interest, until the equipment is sold.
5. A Carrier dealer is protected against price reductions on unsold inventory at all times. If he buys his equipment before the selling season begins, this price-protection can last for up to eleven months.
6. A Carrier dealer enjoys the most liberal product warranties in the business. These high allowances assure customers' satisfaction without affecting dealer profits.
7. A Carrier dealer gets sales support from the Carrier National Buyer Organization. This team sells national firms who require air conditioning installations in the dealer's town, turns the order over to the dealer.
8. A Carrier dealer is backed with hard-selling advertising support. Heavy national magazine and key-market newspaper advertising sell the Carrier dealer as the man who knows air conditioning best. Liberal co-op policy, sales promotion material, let him tie in effectively at the local level.
9. A Carrier dealer enjoys unequaled prestige – his products are known and respected. The Carrier dealer is Mr. Air Conditioning wherever he's located. And judging from the potential market for air conditioning, his future growth and success are unlimited.
10. The largest selection of air conditioning equipment on the market. If it can be air conditioned, Carrier dealers have what it takes!

WHAT'S IT LIKE?

Burns natural, mixed or LP gases. Upflow and downflow models. Capacities from 80,000 to 160,000 BTU/hr input. Installs easily in utility room or closet near living areas. Extremely quiet because new CARRIER FLOATING BLOWER MOUNT suspends motor and blower inside blower housing, eliminating vibrations. Complete line of matching plenums and cooling coils for summer cooling.

WHY IS IT BETTER?

The new Carrier Winter Weathermaker was designed from the ground up as a "Furnace with a Future"—for the efficient adding of summer cooling at a later date. Casing is amply wide for cooling air flow. Blower was selected to provide the cfm required for cooling. All models approved for .5" static pressure. Heat exchanger designed for minimum resistance to air flow. New fan and limit switch location in air stream permits more exact control of air stream temperature. Cooling coil can be added with no change in blower assembly.

HOW IS IT A GOOD THING FOR THE CARRIER DEALER?

The new gas-fired Winter Weathermaker gives the Carrier dealer another good product for year-round selling. Extra duty performance makes it superior to competitive furnaces. Dealer can offer builders a Carrier-prepared promotion kit to help builder merchandise each home as "A Home with a Future." But above all, the new Carrier Winter Weathermaker is the "Furnace with a Future" for the dealer. You sell the Carrier furnace today to the builder. In the future the satisfied home owner returns to add Carrier Summer Cooling—more business for the Carrier dealer.

Carrier

INTERESTED IN BECOMING A CARRIER DEALER?

Talk it over with your Carrier distributor. You'll find his name in the Yellow Pages. Carrier Corporation, Syracuse, New York.

AGA Details 'Steps to Success' On Air Conditioning Promotions

NEW YORK CITY — The American Gas Association has announced a how-to-do-it booklet, entitled "Steps to Success," which provides utility companies with detailed plans of action for launching and conducting air conditioning programs.

The new 84-page booklet was produced by the association's Air Conditioning Promotion Committee for utility executives and sales management. The publication presents step-by-step plans for companies just beginning their air conditioning sales and service programs, as well as data for utilities expanding existing programs.

Featured in "Steps to Success" are details on the economics of air conditioning, organizational goals, outlines of management policies that have proved successful, and the results of varied utility sales and service procedures, it was stated.

The booklet also presents newly-available statistics on gas air conditioning, including the total number of residential, commercial, and industrial gas installations to date, and the industry's total sales for 1957.

Another section devoted to "The Government as a Customer" offers an up-to-date report on extensive purchases of central air conditioning systems planned by the Armed Forces and the General Services Administration.

Copies of "Steps to Success" are available from the AGA Promotion Bureau for $2 each.

Current of Low Velocity Air Drops Off at Edge Of Ticket Window To Keep Cooling In Office

FORTY-FOOT open front in the newly-modernized air conditioned ticket offices, Union Station, Kansas City, Mo., is shown in the above photograph. A low velocity air current drops off along the ticket window counter to prevent the cooled air from overflowing into the station lobby. Ten-ton G-E unit is at right of clock.

Air Conditioning Needed For Health of Workers

KANSAS CITY, Mo. — Good engineering of an air conditioning problem contributes importantly to giving more efficient and pleasant relations with the public as part of a half million dollar modernization program in Kansas City's famed Union Station.

Air Contractors, Inc., member of Mechanical Contractors' Association of Kansas City, came up with the answers for air conditioning the modernized ticket offices, which include an open ticket window front 40 ft. long and 5½ ft. high.

TICKET OFFICE BUILT IN 1914

The old ticket offices, built in 1914, were in an air open semi-circular cage allowing for warm air circulation and noise echoing from the high ceiling and spacious station lobby.

To eliminate the noise it was necessary to enclose the three sides and roof the ticket offices. Installation of new, modern, simplified ticket equipment and a new communications system, permitted cutting the floor area approximately one-third.

Obviously, however, the enclosure made air conditioning a further necessity for health reasons and efficiency of more than 20 round-the-clock employes on duty, as well as others engaged with the operations of 12 major trunk railway lines moving in and out of Kansas City.

OPEN FRONT PROBLEM

In designing a system to operate efficiently with the open ticket window front, considerable thought had to be given the problem.

A 10-ton General Electric package unit was installed at the rear of the enclosure. With an overhead distribution system supplying air to the interior, it is so designed that a current of low velocity air will drop off at the edge of the ticket window counter without overflowing into the station lobby.

This remodeling has been under the supervision of A. R. Shaw, president, and Carl Kobrock, chief engineer of The Kansas City Railroad Terminal.

Other modernizations include an attractive new lobby entrance to the Fred Harvey Restaurant and other restaurant interior improvements for both food and beverage facilities.

For your REFRIGERATION, AIR CONDITIONING and HEATING UNIT NEEDS . . .

Specify Quality-Controlled

PHELPS DODGE COPPER TUBE!

- All tempers and sizes for use in original equipment.
- Straight length tube tempered to meet your bending and expanding specifications.
- Quality-controlled throughout manufacture to assure finest tube properties.
- Tubes degreased and capped, or dehydrated and sealed, if required.
- Deliveries geared to your production requirements.

First for Lasting Quality from Mine to Market!

PHELPS DODGE COPPER PRODUCTS CORPORATION

SALES OFFICES: Atlanta, Birmingham, Ala., Cambridge, Mass., Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Fort Wayne, Greensboro, N. C., Houston, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis, Seattle, Washington, D. C.

✔ COMING IN MAY

One of the greatest air conditioning ads ever! Here are preview comments from top-ranking distributors of central air conditioning!

Nothing like it ever before - TREMENDOUS!

The best sales ammunition I've ever seen!

Westinghouse is selling central air conditioning the way it should be sold!

A real powerhouse ad!

This is great...it's packed with common sense, drama AND...

Excitement

FIRST SHOWING TO THE PUBLIC IN THE MAY ISSUE OF HOUSE BEAUTIFUL

. . . on newsstands April 21! Written by Bob Considine, famed newspaperman, it's the most exciting ad the air conditioning industry has ever seen. Breaks in America's top magazine for homeowners! Don't miss it!

House Beautiful

7 full pages in full color

. . . more about central air conditioning than the public ever knew before! Rich, ripe, powerful selling ammunition that is destined to move merchandise and build profits for Westinghouse air conditioning distributors!

Just one more BIG reason why the switch in air conditioning is to Westinghouse!

J-80563

Air Conditioning Division
Westinghouse Electric Corporation
Staunton, Virginia

YOU CAN BE SURE...IF IT'S Westinghouse

Control of Slime and Algae Trouble Makers

Drain, Flush, Clean Equipment Thoroughly when Slime Occurs, Add Slimicide

NEW YORK CITY—One of the more complex problems in the maintenance of air conditioning systems is the control of slime and algae, both potential trouble makers, according to Dr. Sidney Sussman, chief chemist of Water Service Laboratories, Inc., chemical engineer and specialist in water treatment.

Dr. Sussman points out that one of the principal reasons why the control of slime and algae is often more difficult than arresting scale or corrosion is that the former result from the growth of living organisms. Many species of slime producing bateria and algae are involved and each responds differently to various methods of treatment.

Even within a given species, he says, not all of the bacteria have the same response to a given dosage of any slimicide, even as human beings will respond differently to the same does of a given medicine.

It is for this reason, Dr. Sussman states, that it is not always possible to clear up completely slime and algae problems merely by including a fixed amount of slimicide among the chemicals used for scale and corrosion control.

Growths Described

Slimes are generally grayish or yellowish accumulations of mucoid material produced by bacteria during their growth processes. Slimes tend to cling to many parts of the air conditioning system where they can interfere with the flow of water through nozzles, cause high head pressures in refrigerant condensers, produce odors in air washers, and increase corrosion in the equipment.

Algae are colored organisms, generally some shade of green, such as the green scum frequently seen on the surface of ponds. They require sunlight for their growth and are found in the head pans of those cooling towers which have perforated head pans for water distribution.

They can grow quite rapidly to form a thick mat of green organic material which may clog the holes or nozzles in the head pan and interfere with the operation of the cooling tower to the extent that it will no longer provide sufficient cooling.

The organisms together with other matter are picked up from the asmosphere whenever circulating cooling water is exposed to the air, according to Dr. Sussman. This happens in such equipment as cooling towers, evaporative condensers, and air washers which act as air scrubbers.

Air May Contain Slime-Formers

Among the materials scrubbed from the air are acidic gases and air-borne dirt. The latter is a widely varying mixture of particles of sand, construction materials, soot, and organic matter. It also includes many bacteria, and the seeds and spores of plants. Included among these are the slime-forming bacteria and the spores of algae.

When indications of slime or algae formation are noted, it is important, in the opinion of Water Service Laboratories' chief chemist, that the operator of the equipment should notify his water treatment company promptly and that thereafter both cooperate closely in taking steps to overcome this trouble.

A two-fold attack is necessary in order to eliminate the slime as quickly as possible and to maintain the system reasonably slime-free, he says. Good housekeeping, including regular maintenance cleanings, plays a major part in such a program.

Outlines Removal Procedure

"The first thing to do when slime growths have been noted," Dr. Sussman advises, "is to clean the equipment thoroughly or, at least, those portions of the equipment which are readily accessible. This cleaning should include the draining and flushing of the equipment and removal of as much visible slime as possible, either by scrubbing or by the use of a high pressure stream of water or steam. Second, when the equipment is refilled after cleaning, draining, and flushing, slimicidal chemicals should be added to the water by the water treatment contractor.

"Various considerations, such as the avoidance of odors in air washers, will guide the water

(Concluded on next page)

MIGHTY MITE
Motor Protectors Save
THOUSANDS OF DOLLARS
in Motor Replacement
EXPENSE
MECHANICAL INDUSTRIES PRODUCTION CO.
223 ASH ST. • AKRON, OHIO

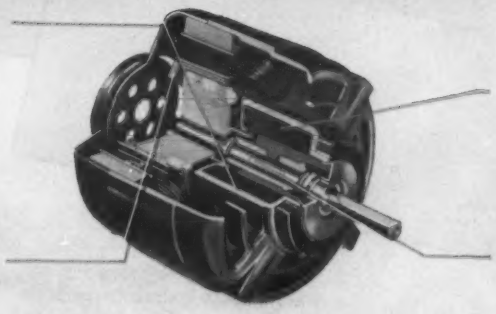
HOW YOU CAN BUILD SALES WITH GENERAL ELECTRIC'S

quieter, long-life

. . . WITH THESE PROVEN BENEFITS OF G-E UNIT BEARING DESIGN

Bearing housing of integral cast design provides accurate alignment for smooth, quiet operation. Sturdy sleeve bearing handles normal radial and axial thrust loads in any mounting position.

Large die-cast fan integrally cast on rotor provides maximum heat dissipation for longer motor life.



Large capacity sealed oil system is designed for years of dependable service without re-oiling, permits all-angle mounting.

Forced lubrication system provides constant supply of recirculated, cooled, and filtered oil for longer life, quieter operation.

(Concluded from preceding page)

treatment specialist in the selection of the slime control chemical to be used. Ordinarily he will apply chemicals that have proved most generally effective and in amounts which appear to be sufficient on the basis of his experience.

Growths May Reappear

"It is not at all unusual, however, for the slime in a given location to resist such treatment so that a change to a larger dosage or to a different chemical is subsequently required.

"It is also not unusual for the slime-forming bacteria to be killed or adequately controlled initially, and then to again grow suddenly at a later date even in the presence of the chemical which has apparently controlled it until that time.

"When such a condition develops, a change in the treatment chemical is, of course, necessary," he said.

"By working together, the operator and the water treatment company can develop a combined maintenance cleaning and chemical treatment program which will require the minimum of cleaning while controlling the slime.

"Usually this will require rather frequent cleanings at first, followed by a gradually increasing time interval between cleanings.

"At times, the need for frequent slimicide additions will make it necessary for the equipment operator to add treatment chemicals as directed, even though normal chemical treatment is applied by the water service contractor's personnel."

For cases that have rather severe slime conditions, Dr. Sussman says that it may be necessary to apply a sterilizing process during the cleaning operation. Details of such a sterilizing and cleaning procedure can be furnished by the water treatment company when required, he said.

Buffalo Group Urges Consumer Education On Service—List Topics for Explanation

BUFFALO—Best approach to problems of appliance service is through consumer education. This is the view of many retailers who met here at a meeting called by the local Better Business Bureau.

A pamphlet concerning service will be prepared, it was announced, and leading manufacturers will be contacted explaining conclusions reached at the confab.

Special emphasis will be placed on the parts shortage problem as it affects service complaints.

Here is what it was agreed consumers should be told.

BBB suggested "Understanding Major Appliance Service":

1. All major appliances are guaranteed by the manufacturer to be free from defects at time of sale. Also called a parts warranty, this guarantee provides for repair or replacement of any parts which may become defective during a specified period.

For example, the sealed unit of a refrigerator is usually guaranteed for five years and other parts for one year. Such a parts warranty does not include labor or service charges necessary to replace defective parts.

2. Arrangements for service or labor should be made with dealer for whom the appliance is bought. It is not always included in the purchase, particularly when bought at discount.

If not included, most retailers will arrange to provide service if desired by the customer in the form of a service policy covering a specified period and for which a separate charge is made.

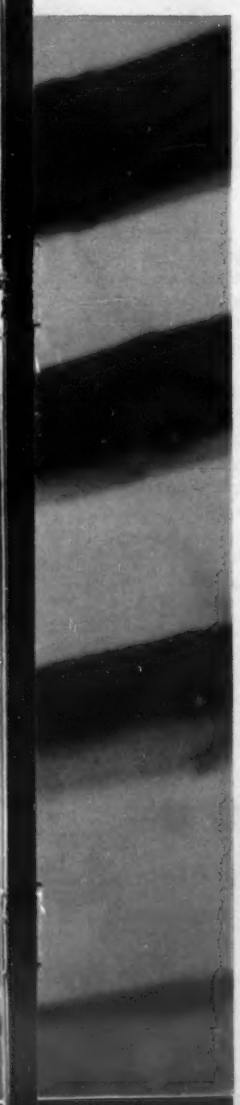
3. Replacement of the entire appliance is seldom made by the guarantor. He has the option of repairing or replacing individual parts, assemblies, or the entire appliance and the choice is his, not the customer's.

4. No reliable dealer will deliberately delay the performance of service for which he is responsible. When delays do occur, they can be caused by unusually heavy demands for service, or by a parts' shortage.

When dealing with an established organization which is seriously concerned with customer goodwill, patience is required if the dealer is unable to make repairs as quickly as he would like.

5. In buying appliances, choose a dealer who is in a position to provide good service. It may be wise to check service facilities as carefully as the product to insure long-range satisfaction with the purchase. Call the Better Business Bureau for a reliability report on any dealer.

shaded-pole motor



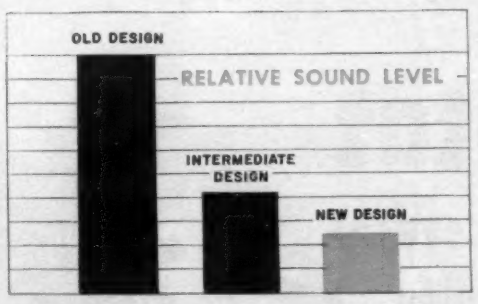
For your customers' satisfaction, General Electric offers you an important advancement in its 5-inch diameter unit bearing shaded-pole motor design. ***This is the new General Electric shaded-pole motor that has a 40% lower sound level, and an improved sound quality through reduction of objectionable frequency peaks.***

In order to put this new motor on the "very quiet" side, General Electric's engineers made extensive use of G.E.'s industrial sound laboratory. Here the new motor design was thoroughly tested—both free running and mounted on products. As a result, General Electric engineers achieved a marked reduction in over-all motor sound level.

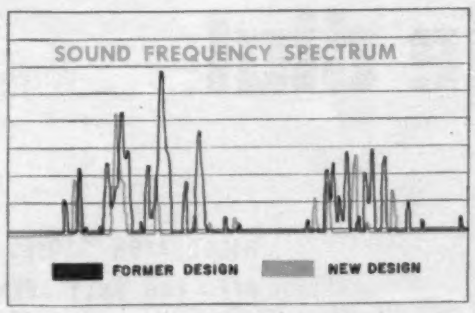
LESS NOISE MEANS MORE SALES FOR YOU. This combination assures you of a truly quiet motor for those applications where noisy operation can mean lost sales—for example, in appliances and air-moving devices for homes, hotels, hospitals, etc. The significant decrease in shaded-pole motor sound level was made possible by a new magnetic stator and rotor design. This new design allows for lower sound level without sacrifice in motor performance, and completely eliminates the use of magnetic wedges.

LONGER MOTOR LIFE RESULTS FROM PROVEN ALL-ANGLE BEARING DESIGN. The extra-large capacity sealed-in oil system as shown in the cut-a-way illustration has become the accepted quality standard in such difficult to service applications as condenser cooling fans and unit heaters.

Like more information on the many additional features of the G-E shaded-pole motor line? Fill out and mail the coupon below, or contact your nearby General Electric Apparatus Sales Office. Section 632-14, General Electric Company, Schenectady 5, New York.



BAR GRAPH shows that new shaded-pole motor has a 40% *lower sound level* than previous design, over 74% lower than old-style design, to provide quieter operation where noisy operation means lost sales.



ACTUAL OSCILLOSCOPE READINGS show how the new shaded-pole motor design reduces objectionable sound pitch peaks. The new design *improves sound quality* by making noise level less noticeable.

Progress Is Our Most Important Product

GENERAL ELECTRIC

FOR A COPY OF THE FREE BULLETIN, GEA-6134, covering ratings 1½ watts through ⅛ horsepower, mail this coupon to Section C 632-14, General Electric Company, Schenectady 5, New York.

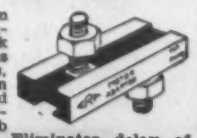
NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

MOTOR BASE ADAPTERS
Sell Many Other Items



Keep them in stock. Servicemen will pick up adapters and motors, carry them in their cars, and complete service on the job in one call. Eliminates delay of having motors away for rebuilding. Adapters are easy to install, fit any base. No motor shaft too long or too short. They also bring you more sales in motors, belts, pulleys, controls, etc.

SIZES FOR ⅙ to 3 H.P. Inclusive

Engineering Research Associates, Inc.
3475 East Nine-Mile Road
Hazel Park, Michigan

Fulton Sylphon Moves Office

WASHINGTON, D. C. — Fulton Sylphon Div. of Robertshaw-Fulton Controls Co. has occupied new sales offices at 734 Fifteenth St., N.W. here.

The division formerly had its sales offices at 1625 Eye St., N.W. J. T. Jones continues as manager of the new office.

CONTAMINATION

Serviceman Frequently Guilty of Adding Contaminants In Field, Bodine Tells Canadian RSES Convention

By Frank J. Versagi

TORONTO, Ont., Can. — "All servicemen have opened systems at one time or another and found things like copper plating, sludges, discolored parts, and parts destroyed or weakened by apparent chemical attack.

"The good serviceman," according to Dale Bodine, director of educational services, Copeland Refrigeration Co., "asks himself 'why' when he encounters such things."

Speaking on "Contamination in Refrigeration Systems" to the 19th annual convention of the Canadian Refrigeration Service Engineers Society, Bodine continued, "We know that acid, in one form or another, is the major cause of these troubles. The acid, of course, comes chiefly from the breakdown of refrigerants when they react with moisture.

"In contact with the components of the system, the acid generates other foreign materials like copper salts, iron salts, oil sludges, and the like.

"The speed with which acid formation and resultant corrosion will take place depends largely on the temperatures reached in the system. This in large part accounts for the fact that, where corrosion has taken place at all, the discharge valve reed area is usually highly discolored, for the temperature here is normally the highest in a system. It is important to remember that for every 18° rise in temperature above 100° F., the rate of chemical reactions approximately doubles."

At this point Bodine projected Table 1 showing typical temperatures which are encountered in a unit charged with Refrigerant-12. He explained that in the first three cases, the same compressor operating at different suction pressures gives varying discharge temperatures. In the fourth case, a heat interchanger effect caused by a long suction line superheated the suction vapor.

In the last case, it was possible to reduce the discharge temperature by lowering the condensing temperature.

"Too often in the field the terms *evaporating temperature* and *suction gas temperature* are misused. Evaporating temperature is the saturation temperature of the refrigerant at the suction pressure existing.

"The suction temperature is the actual temperature of the vapor, usually superheated, at the point in question—usually entering the compressor."

Pointing out that the moisture limit in Refrigerant-12 is such that it is normal to encounter freeze-ups before encountering corrosion, Bodine stressed that this is not true in the case of Refrigerant-22.

"In this case," he said, "the solubility of water in the refrigerant is so high that corrosion is likely to occur at levels where freeze-ups are no problem."

Table 1

Evaporator °F	Vapor Entering Cylinder °F	Condenser °F	Discharge °F
40°	80°	130°	182°
0°	80°	130°	233°
-40°	80°	130°	298°
-40°	115°	130°	332°
-40°	115°	100°	299°

Bodine explained that it is not always correct, though it may be expedient, to lay the blame for acid formation on the unobserved entrance of air and/or moisture into a system.

Moisture Added In Form of Excessive Flux

"Sometimes the serviceman adds it directly in the form of excessive solder flux," he pointed out. "In one case I saw a serviceman squirting liquid flux all over a joint. When I asked if he wasn't afraid that he might get some of the flux into the system, he answered that it wouldn't make any difference since the material would vaporize away somehow.

"How wrong he was," Bodine said.

In the case of oil breakdown, Bodine "prayed" that the lubrication industry comes up with a "miracle oil" which will not break down at the temperatures being generated in new compressors.

"The carbon from the oil causes stuck valves, reduces efficiency, and this in turn raises the temperature still further. In extreme cases, where the high temperatures, acid, and oil breakdown have attacked the Swedish steel in the valve reeds, it is possible for the metal to become brittle and break.

"The broken valve parts may find their way to almost any part of the system unless trapped out; it has happened that pieces lodged between the piston and the cylinder, caused extensive damage.

Returning to the subject of excessive temperatures in units, Bodine pointed out that suction-cooled motors, in effect, trade one problem for another, since the heat taken from the motor

(Concluded on page 15)

New low-cost, high-capacity

thermostat

controls several circuits with a

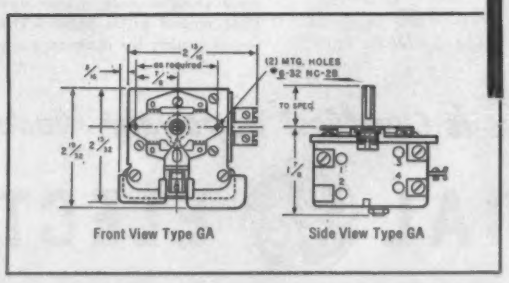
single dial

WILCOLATOR SERIES GA PROVIDES OFF—FAN ONLY—FAN and COOLING

In the new Wilcolator Series GA thermostat, a built-in switch—cam operated by the dial shaft—makes it possible to control several circuits with a single dial and disconnect more than one line when the dial is in Off position. In air-conditioner applications, this provides for Off, Fan Only, and Fan and Cooling.

Featuring an improved snap-action switch for higher contact ratings, these compact, low-cost thermostats have ample capacity for heavy duty appliances and medium industrial requirements. Amplitude factory set to your specifications. Contact mechanism not affected by vibration. Can be used with any dial or pointer having a ¼-in. shaft hole.

For more information, write The Wilcolator Company, 1001 Newark Ave., Elizabeth, N.J. *In Canada:* Wilcolator (Canada) Ltd., 221 Evans Ave., Toronto 14, Ont. *Export Address:* Wilcolator, 1010 Schaff Bldg., 1505 Race St., Philadelphia 2, Pa.



SPECIFICATIONS

Standard temperature range: 0°F min.; 585°F max.

Special temperature ranges: To customer's requirements

Type G1-A: Contacts open on temperature rise

Type G2-A: Contacts close on temperature rise

Contact rating: (Type G1-A) 30 amp, 125 and 250 v a-c noninductive load

Motor ratings: (Type G2-A) 120 to 240 v a-c; running current—14 amp; locked rotor—60 amp

Mounting: Back of panel or in enclosure

Terminals: Screw type, AMP or Arkles; standard shaft size—¼ in. flatted to .156 in.; length to customer's specifications

THE Wilcolator COMPANY

MANUFACTURERS OF LIQUID EXPANSION ELECTRIC THERMOSTATS FOR:

ELECTRIC RANGES • ROOM COOLERS • AIR CONDITIONERS • CLOTHES DRYERS • SPACE HEATERS • ROLL WARMERS • ROASTERS • FRYERS • STEAM TABLES • WARMING OVENS • RANGETTE OVENS • WATER HEATERS • BAKE OVENS, ETC. • STOCK WATER HEATERS • RESTAURANT APPLIANCES • VENDING EQUIPMENT • PACKAGING MACHINERY • PHOTO DRYERS • BLUEPRINT MACHINERY • ETC.

ALL WILCOLATOR THERMOSTATS ARE UL LISTED AND APPROVED

Quality speaks a language everybody understands. Wholesalers, dealers, and users alike know that *Larkin* means quality — of workmanship, materials and performance.

•

Manufacturers of the original Cross-Fin Coil • Humi-Temp Units • Frost-O-Trol Hot Gas Defroster • Air Cooled and Evaporative Condensers • Cooling Towers • Air Conditioning Units and Coils • Direct Expansion Water Coolers • Heat Exchangers

LARKIN COILS

819 MEMORIAL DR., S.E. • ATLANTA, GA.

the quality tells . . . the quality sells

new JANITROL

WIN-SUM-MATIC

year 'round
air conditioner

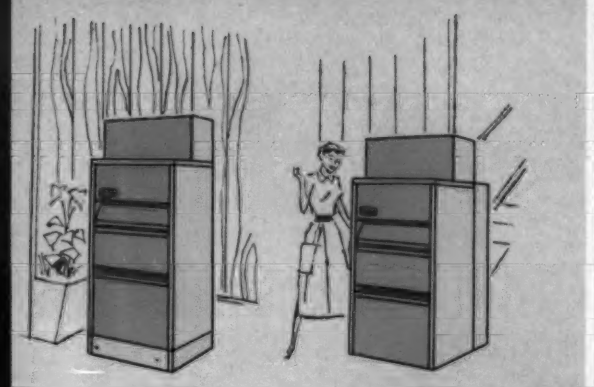
COMPACT...

Fits in as little as 3⅗ square feet!
Features Dura-Tube Gas Heating Heart
and powerful air-cooled cooling.

the Wraps are off...
and from this day on the new

JANITROL
WIN-SUM-MATIC
Year-round air conditioner
is the one to sell and grow with!

New Janitrol Win-Sum-Matic with front panels removed to show compact design and complete accessibility from front.



WIN-SUM-MATIC Model CVC-85 with bottom filter cabinet.

WIN-SUM-MATIC Model CVC-85 with back filter cabinet.

Take the very finest in year 'round air conditioning equipment and make it *even better!* That's what Janitrol has done and this all-new Win-Sum-Matic is the proof.

Here in one compact "package" is surpassing new beauty with wonderful new refinement and elegance of line and color . . . "the look of the future".

Here is new quietness of operation, with thrift that far exceeds accepted standards . . . a whole new concept of efficiency and dependability in performance.

Here is new ease and convenience in installation . . . new flexibility in the wide range of blower and motor combinations . . . new freedom of service and adjustment accessibility. Here, in fact, is everything you need and more to get your share of the booming air conditioning market.

Take a few minutes now to look over the features and advantages only Win-Sum-Matic offers. Then, ask your Janitrol representative—or mail coupon—for full details on how you, too, can sell and grow with Janitrol!

feature-packed for a mighty Sales Punch!
WIN-SUM-MATIC by Janitrol

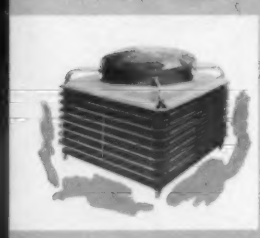
New, Slim "Look of the Future"! New crisp, clean, uncluttered rectangular design with flush front enhances built-in effect . . . saves valuable floor space. New warm-tone neutral colors with gold accent complement decor of any room—harmonize with other appliances.

New, Compact Cabinet. Height of Win-Sum-Matic CVC120-85 (Combination L) is only 6'-8" including outlet plenum. Width 22½", Depth 40". Easily installed in basements with 7' ceilings. Plenum has knockouts on both sides and front for horizontal take-off.

Complete Accessibility from Front. All internal parts are easily reached, simply by removing front panels. Snap-lock panel design. No screws.

Exclusive Season Selector Control. An internal air bypass damper, operated manually or by motor automatically with control by thermostat, provides correct air for heating or cooling without blower adjustments. Damper directs air over heat exchanger for heating, and directly from blower into outlet plenum and evaporator for cooling.

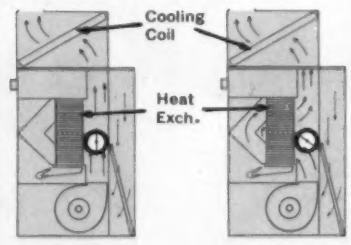
Exclusive PRIDE O' YARD Compressor-Condenser Unit



Special louvered design allows air circulation from all sides while shading condenser from sun at all times . . . boosts efficiency and economy of operation. Rugged, weatherproof construction, with every necessary safeguard for protection of children and pets.

AIR FLOW DIAGRAMS
WIN-SUM-MATIC with Back Filter Cabinet

COOLING HEATING



SEASON SELECTOR (circled) allows straight-through air flow from blower to cooling coil for cooling . . . in winter, directs air through heat exchanger twice for maximum heat extraction.

Exclusive Dura-Tube Heating Heart

Warranted 20 years! Born of the jet age! New A-19 armor coating, used to protect aircraft engine parts from corrosive, ravaging hot exhaust gases, is fused into all internal and external surfaces and joints—assures permanent sealing, new freedom from corrosion and burn-out. Twin-pass air flow design gives more heating capacity in less space, air passes over heat exchanger surfaces **twice,** resulting in higher heat absorption, true heating economy.

New Waterless Cooling Heart. Compressor-condenser needs only air and electricity, operates at lowest cost. Eliminates water supply and sewage requirements. Reduces service problems. Provides cooling with outside temperatures to 125° F.

New Quietness in Operation. Acoustically treated blower chamber, cushion mounted blower and blower motor, full-floating heat exchanger and air-cooled side panels provide a new concept quiet, smooth performance without annoying vibration or expansion-contraction noises.

Wide Range of Blower and Motor Combinations. Special, new blowers with alternate motors for each size of unit to furnish air deliveries for different cooling capacities in each model—greater installation flexibility.

Sizes to Heat and Cool Any Home. Models with heating input 80,000 to 200,000 Btu. Cooling output 22,000 to 76,000 Btu. AGA approved for natural, mixed or LP gas. (Ask about special approvals for commercial applications.)

Please show me how I can sell and grow with the new Janitrol WIN-SUM-MATIC year 'round conditioners and other quality-built Janitrol products for home comfort.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

Fill in and MAIL TODAY. No obligation.

Sell and Grow with JANITROL

Ask your Janitrol representative for all the facts, or RUSH the coupon to us today!

From JANITROL—a complete line of gas and oil furnaces, unit heaters, conversion burners, air-cooled summer cooling conditioners, combination heating-cooling conditioners.

Contamination--

(Concluded from Page 12, Col. 5)

is transferred to the gas, and must still be removed.

"Incidentally," continued Bodine, "it is unwise to increase the fusing or thermal protective device if a motor is running hot. Find out what is causing the overheating; don't attempt to compensate for it with a higher rated protective device. Use the recommendations of the manufacturers who have spent time and money to assure proper performance and safety.

Include Normal Motor Heat In Tower Calculations

"Don't forget, too, to include normal motor heat in any cooling tower calculations. Manufacturers will provide the information you need; generally, you can figure on about 1,700 B.t.u. per horsepower."

Bodine gave several examples of unusual contaminants in systems. In one case chicken feathers were found on the suction strainer; in another case, a large piece of household sponge. "In such cases," he said, "we can be fairly sure that the serviceman was just plain careless in handling his piping, fittings, and other components."

Preventing Contamination

"The serviceman has it in his power to prevent most of the difficulty due to contaminants. Good work habits, normal precaution during installation and service will save many callbacks due to system contamination. We would recommend:

"Keep all tubing capped; pound the ends shut on soft tubing. Swab the tubing before installation.

"Use a good vacuum pump and completely evacuate systems—either new ones or regular service jobs. Never use a new motor compressor as a vacuum pump.

"Use clean, dry oil; clean refrigerant cylinders.

"Handle flux, solder, steel wool with care.

"Always use a drier. In fact, the practical significance of most of the information we have presented is that a drier-filter should be on any system. It's a safety device, for if you have dirt, acid, or moisture from any other source, the drier-filter will trap it out of the system.

"Such precautions taken in the field, together with assured factory clean components will assure a minimum of difficulty with contamination in systems," Bodine concluded.

Paragon Extends Price Guarantee

TWO RIVERS, Wis. — An additional 30-day extension amounting to a total 120-day guarantee against price decline after date of shipment at the wholesale level has been assured Paragon Electric Co. distributors, wholesalers and jobbers, and national distributors, according to Read Eldred, vice president, sales.

The new policy will not be extended to original equipment manufacturers, private label accounts, or contract items.

"Paragon's ever-broadening product line warrants added protection," Eldred said.

Norge Opens Service Training Center

CHICAGO—A national home appliance service training center in River Grove, Ill. was opened April 7 by Norge Div., Borg-Warner Corp.

"The center will stress 'do-it-yourself' instruction, including the basics and fundamentals of service. Every man will bring his work clothes and repair appliances with all types of the oldest and newest service equipment," Elmer G. Fenton, Norge director of national service said.

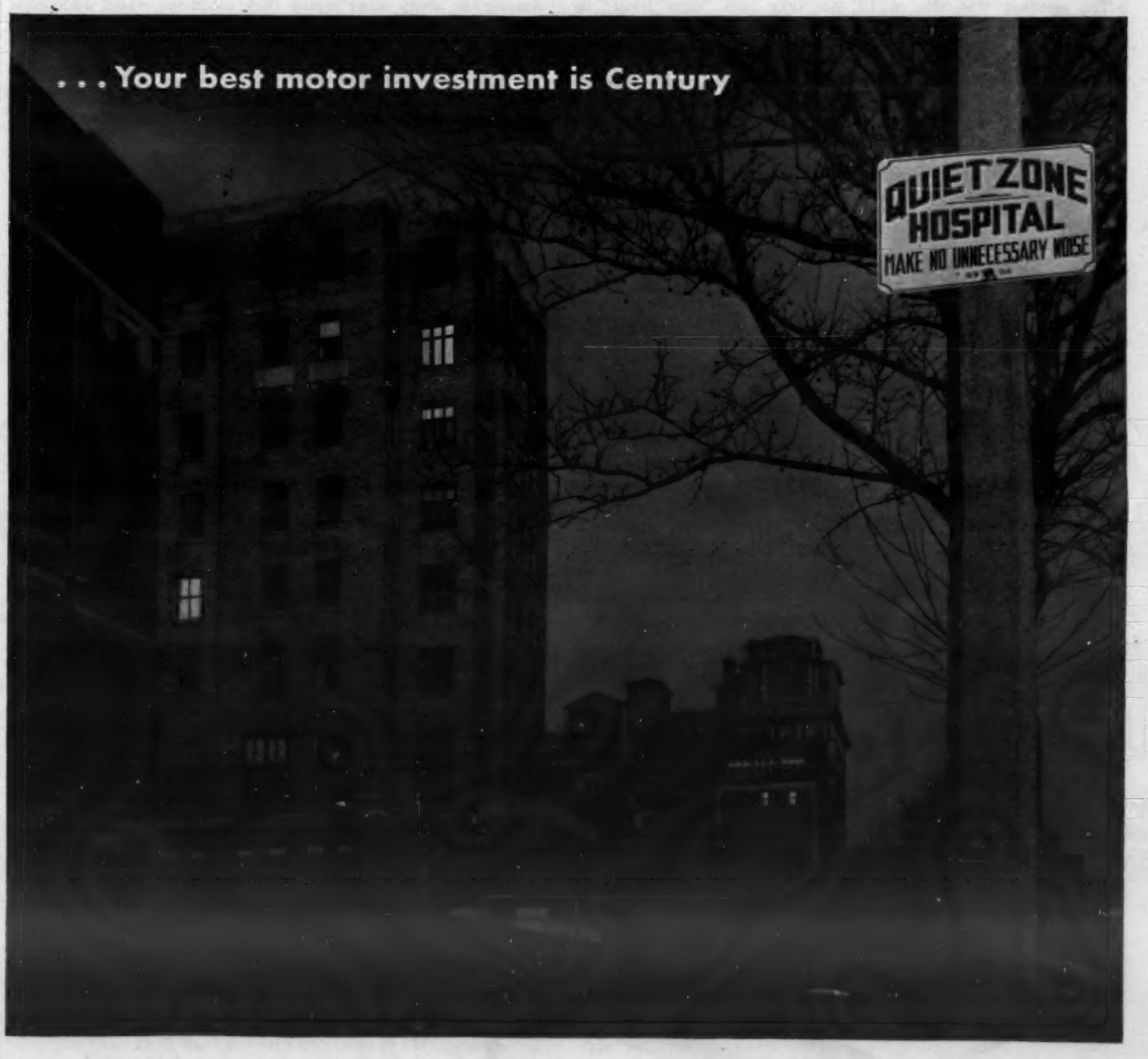
The first sessions during April will be attended by more than 260 servicemen from the marketing areas of Chicago and Peoria, Ill.; Milwaukee and Green Bay, Wis.; St. Louis; South Bend, Ft. Wayne, Terre Haute, and Indianapolis, Ind.; Grand Rapids, Mich.; Des Moines and Davenport, Iowa; and Toledo.

"Servicemen will learn how to use test cords and meters and make quick on-the-spot electrical and refrigeration diagnosis," Fenton explained. "They will work on special cutaway equipment; see a new motivational film entitled 'Handling Situations and customers'; participate in delivery, installation, and user demonstrations; and completely disassemble and reassemble appliances." Sessions will be held in a building containing "the latest in special service equipment and training aids." The site is that used by the Norge Chicago metrotolitan service organization.

Region 6 ARW Golf Tourney Set for June 20

FRENCH LICK, Ind. — Annual golf tourney of Region 6, Air-Conditioning & Refrigeration Wholesalers, will be held June 20 at French Lick hotel.

A meeting will also be held between manufacturers and wholesalers at 8:30 p.m. Thursday, June 19. Golfing will begin at 10 the next morning. Annual banquet and cocktail party will start at 7 p.m., Friday, June 20.



Quiet-running Century motors . . . wherever you need them

Quiet operation is one of the outstanding characteristics of standard Century motors.

Why do Century motors start and run so quietly? Because the design is right . . . electrically and mechanically. And because precision manufacturing guarantees such things as excellent mechanical balance. No wonder Century has such complete acceptance among manufacturers and users of air conditioning, refrigerating, heating and ventilating equipment. Here, particularly, quiet motors are a *must*.

Wherever your equipment is used, quieter Century motors can result in less worker fatigue, greater efficiency as well. And they run smoother, perform better, last longer.

Quietness . . . just one of the features that makes Century your best motor investment. Call your local Century man or Authorized Century Distributor.

Century MOTORS

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

NEW

17-CASE Cap. SELF-CONTAINED BEVERAGE COOLER $250

6 or more $235—10 or more $225

Stainless steel doors and track. Top, front and 2 sides finished in "Multikolor". All radius and ball corners. Tecumseh unit, concealed coils. No interior obstructions of unit or blower. Size—54" l. x 26" w. x 39" h.

4-BROTHERS

REFRIGERATION MFG. CO., INC.

1427 S. 8th St. Phila. 47, Pa.

Tips from 12-City Management Seminar

Contractor's Banking Relations, Insurance, Tax Savings, Credit Policies, Keys to Success

What are the elements of "good management" for the air conditioning and refrigeration and heating dealer or contractor?

There are many elements that go into "good management" for this kind of a business, but it would seem that the three principle ones would be (1) the development of the kind of salespower that will develop enough sales volume to operate the company profitably and promote expansion; (2) proper control of expenditures and services to insure an adequate profit; (3) proper direction and handling of personnel to promote growth in the business and retention of good personnel.

In this series of articles the NEWS has drawn from a variety of sources to present some of the best current thinking on some specific elements that make for success.

CLEVELAND—Bankers like to do business with people they know; people who have well-organized companies, well-defined fiscal programs, and understandable financial data; and people who will use loans to operate, not rescue, a business.

This statement by an official of a large banking chain was quoted to open a discussion on banking relations during a business management seminar held here by Carrier Corp.

The seminar was one of 12 presented by Carrier in cities from coast to coast. Conducted by a "faculty" from the company's Unitary Equipment Div., the two-day workshop sessions were designed to help dealers make a better profit through better management of men, money, and materials.

'Data Book' Gives Banker Picture

During the banking-relations discussion, seminar participants were given a loose-leaf binder of forms which, when filled out, will give a banker the financial picture of a company. A dealer can take this "data book" to his banker to get him acquainted with the dealer's business.

First sheet in the data book summarizes the credit services which banks offer to business. This sheet is for the dealer's information.

The book includes space for data on a company's net worth, total capital, owner, and facilities and book value; personnel; last annual statement of operations; 1958 budget; latest statement of condition; business objectives for 1958; a form for the bank to fill out on bank contacts and requirements; and trade references.

Among the many other topics covered during the seminar were insurance and credits and collections.

To help them organize their insurance programs, the dealers were given an insurance check list. This lists types of policy and types of coverage.

It was suggested that the dealers indicate on this chart their present coverage and then they could see where additional coverage might be needed and where there might be duplication.

Elimination of duplication, of course, would result in savings.

The dealers were advised that they might also save some dollars by studying the tax savings check list handed out next. This list is divided into (1) areas for savings, (2) things to consider, and (3) items worth checking.

These questions are asked under "areas for savings": Is your type of ownership the most economical? Does your fiscal (tax) year end at an advantageous date? Could your methods of financing give you any tax savings? Could your year-end billing methods save tax dollars? Is your withdrawal method the most advantageous? Could you save tax dollars through renting vs. buying? Does your accounting system reveal all possible tax deductions and credits?

Elements of a good credit and collections policy were listed as financing arrangement—to reduce needs for working capital; terms—to bring money in as fast as possible; aging receivables—to keep debtors from taking advantage of you; and policy—to handle collections with automatic procedures.

During this discussion, participants received a folder containing a check list of 43 questions on credit, collections, and bank relations, a number of suggestions on the subjects, and a series of sample collections letters.

Credit Questions

Some of the questions pertaining to credit are: What is the minimum down payment your bank or finance agency will accept on a residential installation? A commercial installation?

Do you complete the credit applications with your customers on time sales? If your prospective customer has a poor paying record in the past, do you investigate further to see if their difficulty had been straightened out?

(Concluded on next page)

When the system's full . . . the indicator tells you so!

IMPERIAL

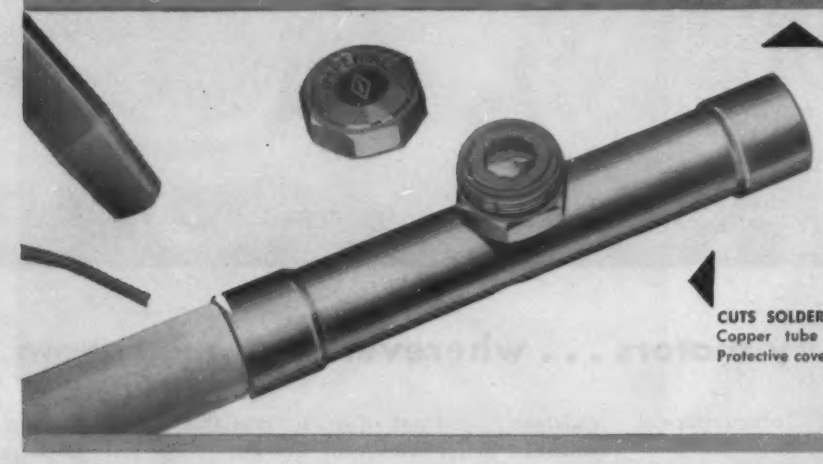
"magic eye"

shows need for refrigerant at a glance!

Man! This *single*-port liquid indicator is without question the greatest work and time saver on the market today! One quick glance and you *know immediately* if system needs refrigerant. Simple as that. No squinting or guessing!

Installs in a flash . . . it's positively leakproof . . . gives years of trouble-free service! A masterpiece of simplicity, compactness and top quality.

Install Imperial "Magic-Eye" Liquid Indicators on your next jobs — find out first hand how they make money . . . build extra customer satisfaction for you.



LEAKPROOF — TROUBLE-FREE — Heavy crystal glass in port hole is thermo-shock and pressure resistant. It's positively sealed with confined sealing medium.

Husky forged brass body, on flare type, cannot be distorted in assembly. Generous wrench flats. Extra-strength walls. Indicator has been pressure tested to 4,000 psi. Swivel and male flare connections precisely machined for positive take up and leakproof re-connection.

CUTS SOLDERING TIME — No Disassembly — Copper tube extensions dissipate heat. Protective cover for glass guards against dirt and damage.

IMPERIAL "Magic Eye" Liquid Indicators available in these sizes:

No. 271-C, FEM. FLARE SWIVEL x MALE FLARE CONNECTION: ¼, ⅜, ½" O.D.

No. 270-C, MALE FLARE CONNECTIONS: ¼, ⅜, ½" O.D.

No. 275-CS, SOLDER CONNECTIONS, ¼, ⅜, ½, ⅝, ¾, ⅞, 1⅛, 1⅜, 1⅝, 2⅛" O.D.

Order from your jobber. Write for Catalog 81.

IMPERIAL

THE IMPERIAL BRASS MFG. CO.
Dept. ACR-48
6300 W. Howard St., Chicago 31, Ill.
In Canada: 18 Hook St., Toronto, Ontario

Emblem of Quality

FITTINGS • VALVES • DRIERS • CHARGING LINES • TOOLS for cutting, flaring, bending, pinch-off, swaging.

NOLIN

Leads the Field

WITH THE
Dry Beverage Cooler

- LEADS IN CAPACITY
- LEADS IN QUALITY
- LEADS IN PERFORMANCE
- LOWEST IN PRICE

NOLIN MANUFACTURING COMPANY
1400 LLOYD ST. PH. 3-4454
MONTGOMERY, ALABAMA

Good Banking Relations--

(Concluded from preceding page)

Do you do enough commercial business to warrant Dun & Bradstreet service? Do you check residential jobs through your local retail credit bureau?

Among questions on collections are these: What do you do when you are notified that a customer's note or contract is past due? Do you age your accounts receivable every month?

At what time do you send out second and third reminders? Do you have any accounts on your books 30 to 60 days past due that you haven't phoned personally? When do you turn over past-due accounts for collection?

Do you know your lien rights in your area? Have you any accounts on your books where your lien rights have expired? Do you arrange for progress payments on jobs where the installation runs over 30 days? Do you offer cash discounts for pre-payment of your normal terms?

Some Questions on Bank Relations

One of the questions on bank relations is: If your unsecured lien at the bank is up to the limit, have you arranged for additional needs by offering them security?

Two others: Do you keep the bank informed of progress on specific jobs that they are financing for you? Do you keep your bank up-to-date on your business even though you have no outstanding loans?

One of the suggestions listed in the folder is to make one person in the organization responsible for all credit and collection investigations. It is also stressed that regarding collections, promptness is the key word and systematic follow-up is necessary.

"In most cases," the folder states, "if you ask what's wrong and make suggestions on how the debt can be paid, you'll make a friend and start the payment on its way. At each such contact, get an answer—get the debtor to commit himself."

Several steps to each collection are listed, such as: Fully explain terms at time of sale; make proper billing, and promptly; record ages of your receivables and keep after delinquents; consider such things as past due sticker or rubber stamps of different types; consider having your attorney handle difficult collections either on a fee or retainer basis; consider collection agencies of other types.

SEND FOR REPRINTS

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.
Only 40¢ each.
For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

FREE!

the only CAPILLARY reference GUIDE for the industry

NO GUESSING CUTTING ADJUSTING NOISE TROUBLE

The trend for economy and efficiency is engineered Capillaries. By all laws of refrigeration and physics demand a custom designed Capillary. A Sealed Unit Guide will help you order the right Capillary for the job!

Sealed Unit Parts Co., Inc.
1178 E. 180th St. • New York 60, N. Y.
Send CAPILLARY Guide and prices
Name_____ City_____
Address_____ Zone____ State____

Names 2 Managers

Square D To Expand Pittsburgh Activities

PITTSBURGH—Construction is under way here on a 10,000 sq. ft. regional headquarters building for the combined activities of Square D Co. and its Electric Controller & Mfg. Co. division, it was announced recently.

It was also announced that Joseph D. Brick has been appointed east central regional manager and Charles W. Duffett has been named district manager. Both positions are the result of setting up a new region to include the territories of Pittsburgh, and Buffalo and Rochester, N. Y. Brick has previously been manager of the local office and Duffett has been a field engineer in the office.

WHAT . . WHEN . . WHERE

— A Guide to Coming Events of Interest

Air-Conditioning & Refrigeration Institute Annual Meeting
May 4-7, The Homestead, Hot Springs, Va.

National Restaurant Association Convention, Exposition
May 5-9, Navy Pier, Chicago.

Western Air Conditioning, Heating, Ventilating and Refrigeration Exhibit
May 7-11, Shrine Exposition Hall, Los Angeles.

Industrial Heating Equipment Association Meeting
May 18-21, The Homestead, Hot Springs, Va.

Institute of Appliance Mfrs. Annual Convention, Exposition
June 1-4, Netherland-Hilton hotel, Cincinnati.

Edison Electric Institute Annual Convention
June 9-12, Boston.

Oil-Heat Institute of America Convention, Exposition
June 9-13, New York City.

American Society of Heating & Air-Conditioning Engineers and American Society of Refrigerating Engineers JOINT MEETING
June 23-25, Leamington hotel, Minneapolis.

Only Halstead & Mitchell offers a cooling tower with a 20-YEAR GUARANTEE

ON THE WETTED DECK AGAINST FAILURE DUE TO ROTTING OR FUNGUS ATTACK

Here's why this is important: Fungus growth on cooling tower wood fill very often can accumulate to the extent that it actually obstructs air flow through the tower. This reduces tower capacity and affects performance of the refrigeration or air conditioning equipment involved. In severe cases, the wood will rot and cause tower failure.

Treated Deckings—For positive protection against such harmful effects, Halstead & Mitchell subjects the wood deck material used in all H&M cooling towers to a special, pressure creosote treatment. That's why *only* Halstead & Mitchell offers a 20-Year Guarantee on the wetted deck against failure due to rotting or attack by fungus. Original tower capacity is maintained, and that reliability is what cooling tower purchasers need.

Anti-Corrosion, Plastic Coatings—Halstead & Mitchell Cooling Towers have many other design features that increase tower life and keep maintenance costs to a minimum. For instance, the cooling tower casings are completely protected against corrosion by separate plastic coatings of Vinsynite, Vinyl Zinc Chromate, and chlorinated rubber, *after assembly*. Every edge, every corner, is sealed against rust.

Permanently Sealed Bearings—Another example, fan bearings are permanently lubricated and sealed. Damaging moisture is kept out. Maintenance and periodic greasing are eliminated.

H&M Cooling Towers are available in capacities of 2 thru 125 tons. Types include propeller fan, centrifugal fan and take-apart models. See your local wholesaler, or write for more information. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.

HM Halstead & Mitchell

COOLING TOWERS • WATER-COOLED CONDENSERS
AIR-COOLED CONDENSERS • FINNED COILS

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

Most base hits in one inning —3. (Tied with three other players.)

Scoring most runs in one inning—3. (Shared with two other players.)

From Waco, Rye was sold to another league, whence he faded from the baseball scene. His inning of glory should have been headlined:

"THE RYE CAME THROUGH."

Youth Movements

Between acts of a New York play a Detroiter encountered Cincinnati Manager "Birdie" Tebbets in the theater lobby.

"Hiya," the Detroiter hailed. "How is your wife, and how are your kids?"

Tebbets stepped on his cigarette and replied, absent-mindedly:

"Hope I can find a coupla right-handed pitchers amongst them."

As a teen-ager in San Francisco Joe Cronin got his start in semi-pro ball. On a Saturday night proudly he showed his mother a $10 bill he'd received for short-stopping that afternoon.

"Dear me," startled Mrs. Cronin, "if I'd known baseball paid so well I'd have made your father quit the railroad years ago."

At times huge Ernie Bonham, Yankee pitcher, was called "Tiny." Other times his nickname was "Jumbo."

"They call me 'Jumbo,'" reasoned Bonham, "because I work for peanuts."

Here's One for Ripley

Believe it or not, an organized baseball team collected six hits (including three triples, a double, and two singles) *in one inning* — but couldn't push a runner across the plate. On Memorial Day, 1890, an Indiana Trolley League team registered that feat.

Here's how: First batter tripled. He tried to score on a short passed ball, and was thrown out at the plate. Second batter lined over the centerfielder's head, and was tagged out when he tried to stretch his clout into an inside-the-park home run.

Third batter also tripled, but prudently squatted on the "hot corner."

Hitter Number Four topped a roller toward third base. Expecting it would roll foul, the fielder let it go until the batter reached second. It stayed fair, and No. 4 was credited with a two-bagger.

Fifth batsman bunted. The pitcher bluffed the runner back to third. In so doing the bunter made first. So, with two out, the bases were loaded.

Sixth batter smacked a drive into the pants of the man perched on first. Automatically the latter was out when the ball struck him. Mister Six received credit for a base hit, but the side was retired.

Three triples, a double, and two singles in a half-inning. But no tally on the score sheet.

Fast Fielding

"We umpires are like women," quipped Larry Goetz.

"We make decisions quickly, win all arguments, and don't believe a man is safe when he is out."

Yankees were being measured for uniforms in Florida.

"What's your cap size, Yogi?"

"Now, or when I'm in condition?"

As a last-ditch attempt to funnel a pitcher (who loved funning) onto the straight and narrow, John McGraw sent his paycheck directly to the latter's wife.

Few days later McGraw informed this fellow he would be the starter.

"Huh uh," rejected the moundsman. "You're payin' my wife now. Let her pitch."

Golden Moment of Memory

Longtime inhabitants of the bleachers at Briggs Stadium (and these more-or-less "regulars" are a grand gang) agree on one thing only:

Their happiest memory consists of an ultra-dramatic night game against the New York Yankees, June 23, 1950.

Tommy Byrne, to whom the Tigers normally were "cousins," hurled for the Yanks; Diz Trout for Detroit. Thanks to six home runs and Byrne's effectiveness, New York enjoyed a six-run lead in the seventh inning. Any sensible man knew that the Tigers had no chance.

A couple of walks and an infield miscue thereupon filled the bases full of Tigers. Poor-hitting pitcher Trout was at bat with two out.

At this hushed moment an enormous colored man stood aloft in the bleachers, waving folding money in both hands. "I bet anyone even money Trout homers," he bellowed. There were plenty of takers for this ridiculous wager.

Impossible, of course. So help us, Trout did whang-g-g a grand-slammer into the upper right field seats.

The odds-defying negro giant collected from everyone in sight, filled his hat and pockets with green stuff of various denominations, and "glory-be'd" downstairs to the beer concession.

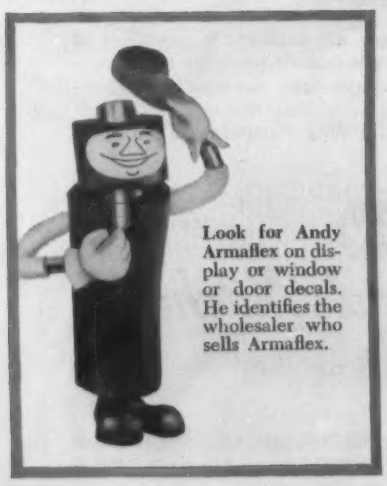
A happy fluke. Yet the Tigers still were two runs behind in the last of the ninth. Two out, two on, Hoot Evers at the plate. Hoot, although a good man in the clutch, wasn't celebrated as a long ball hitter. Hope was scant.

Straight at Peerless Joe Dimaggio in centerfield Evers propelled a rising line drive. It caromed off the edge of Joe's glove. He chased it down, and

(Concluded on Page 21, Col. 1)

New Armaflex line includes ¾", ½", and ⅜" nominal wall thicknesses to 3" IPS. On larger piping, Armaflex sheets are used.

Now—3 thicknesses of Armaflex pipe covering to stop condensation down to zero



Look for Andy Armaflex on display or window or door decals. He identifies the wholesaler who sells Armaflex.

Now Armstrong Armaflex comes in a brand-new ¾" nominal wall thickness. With this new pipe covering, you can apply the economical amount* of insulation to stop condensation on lines operating all the way down to zero. For higher temperatures or less severe conditions, you can choose Armaflex in ½" and ⅜" wall thicknesses. Minimum thicknesses of Armaflex can be used because this insulation has a low k factor of .28 at 75° F. mean temperature and its closed cell structure seals out all air, vapor, and moisture.

With Armaflex, labor costs drop as much as 50% compared with costs of applying conventional insulation to pipes and fittings. Armaflex can be slipped over piping before connections are made, or slit and snapped in place. Joints are sealed with 520 Adhesive. Fittings are easily and quickly insulated.

* **Recommended Armaflex thicknesses** for various service conditions are listed in free descriptive booklet. For your copy, write today to Armstrong Cork Company, 2204 Parsons Street, Lancaster, Pennsylvania.

Armstrong INSULATIONS

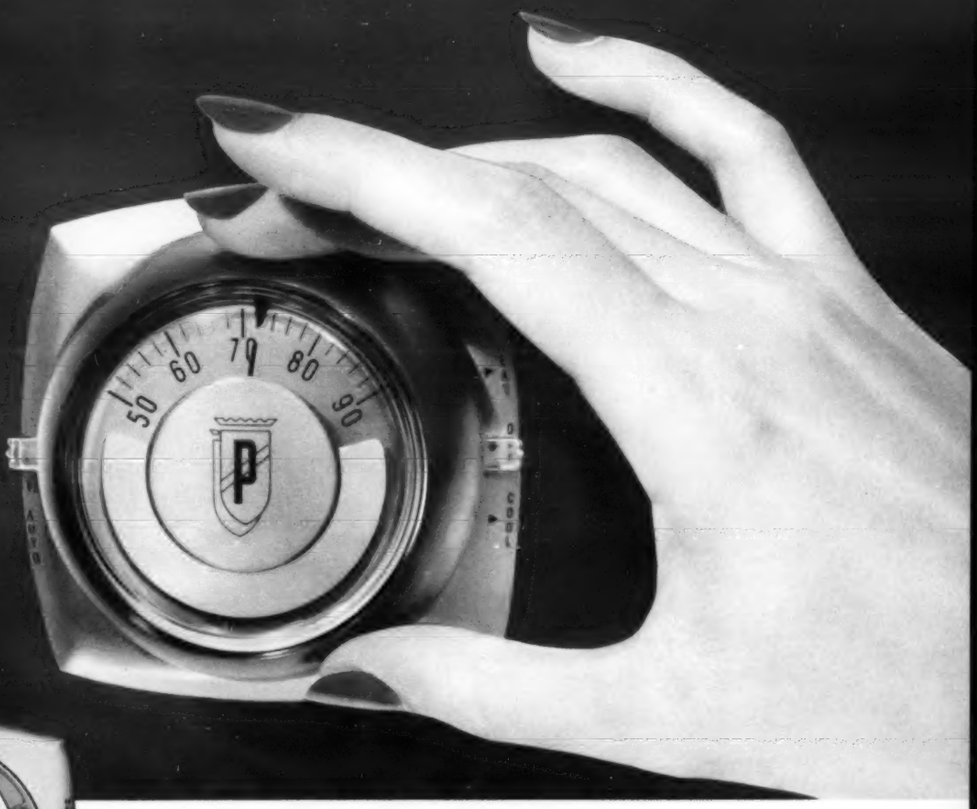
MIGHTY MITE Thermal Protectors ARE CHEAP Insurance Against Motor Burn-outs

MECHANICAL INDUSTRIES PRODUCTION CO.
223 ASH ST. • AKRON, OHIO

just dial
the rim...

easiest
to set...

easiest
to read



APPLICATION	FAN SELECTOR SWITCH	SYSTEM SELECTOR SWITCH
HEATING ONLY	—	—
	—	AUTO-OFF
COOLING ONLY	—	—
	—	AUTO-OFF
	AUTO-ON	AUTO-OFF
	AUTO-ON	—
COOLING—with system interlock for separate heating thermostat	—	HEAT-OFF-COOL
	AUTO-ON	HEAT-OFF-COOL
COMBINATION Heating-Cooling	—	HEAT-COOL
	AUTO-ON	HEAT-COOL
	—	HEAT-OFF-COOL
	AUTO-ON	HEAT-OFF-COOL

PENN "RIMSET"

handles 12 different heating and cooling jobs

Here's versatility that reduces your control inventory! All you need is *one thermostat unit* . . . the Penn "RIMSET" . . . then stock various sub-bases. Look at the chart . . . all variations for 12 different heating-cooling functions are in the sub-base, the thermostat unit fits them all.

Here's simplicity that saves installation time! Leveling is not essential for accurate operation. All wiring is on sub-base where large terminals are accessible. Thermostat is simply plugged into sub-base.

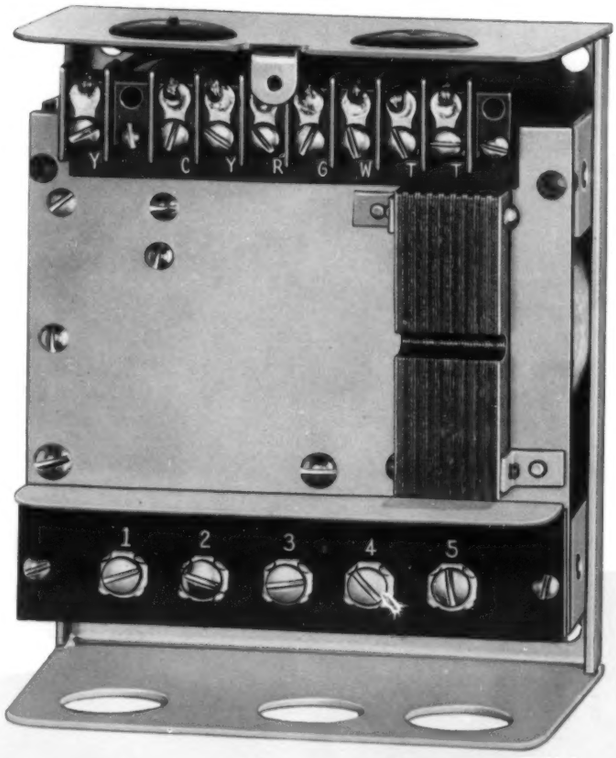
And, unlike other thermostats, the "RIMSET" does not chatter to cause undesirable "on-off" operation when vibration occurs. On your next job, use the Penn "RIMSET" . . . the thermostat that keeps customers sold on you!

AND, THERE'S MORE FOR YOU

HERE'S THE NEWEST

FAN CENTER

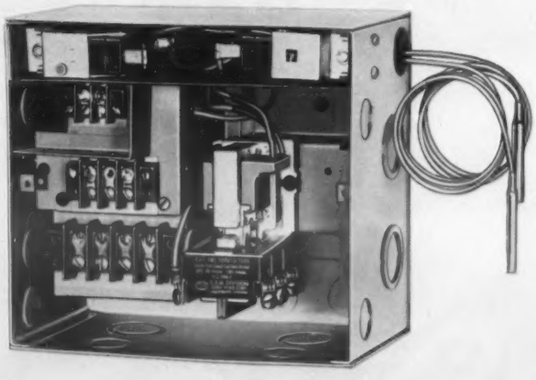
TO CONTROL AIR HANDLING EQUIPMENT

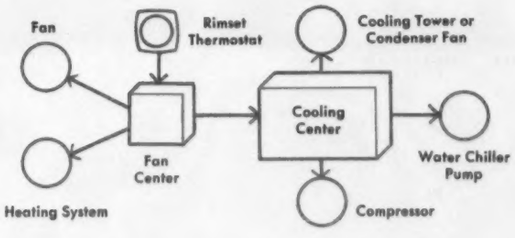


For residential air conditioning systems with remote cooling equipment . . . use the Penn "Fan Center" to control the Fan Coil Unit. It will save you installation time and assure efficient control of the air handling equipment. Compact, only 4½" wide and 6" high, the Penn Fan Center combines a transformer with fan relay, reset relay and heating relay . . . *one or all.*

And, on the remote condensing unit or water chiller be sure to *specify* a Penn "Cooling Center." Both of these control centers have the latest engineering advances to give your customers the finest air conditioning performance possible. One installation will convince you . . . try them and you'll use them on all your jobs.

COOLING CENTER for remote cooling equipment





Penn "Cooling Center" is 7" high and 8" wide. It combines pressure controls, contactor, auxiliary relay for (a) water chiller pump, (b) tower pump or fan relay or both, (c) condenser fan relay. Diagram illustrates functions.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Scoop! Exclusive Predictions on the 1958 Pennant Races by an Expert

J. J. Redeker "has it made." Not only is he the father of esteemed Phil Redeker, Editorial Director of this publication, but he is the envy of all baseball fans. Years ago Mr. Redeker retired to pursue his hobby—baseball, naturally. Annually he visits the spring training camps, and shrewdly judges the talent on every club.

Herewith we present his predictions of the order in which each team will finish the season (In the World Series, it's the Cardinals vs. the Yankees.)

National League

St. Louis	Los Angeles
Milwaukee	Chicago
Cincinnati	Philadelphia
Pittsburgh	San Francisco

American League

New York	Boston
Detroit	Baltimore
Chicago	Kansas City
Cleveland	Washington

And here are his comments on each club:

National League

St. Louis—just to be different I will place the Cards first. Looks like they have the pitching, pretty good hitting, and team spirit.

Milwaukee—my favorite of all, second baseman "Red" Schoendienst, is still on the job.

Cincinnati—plenty of hitting strength, good field, and look for them to pick up some pitchers.

Pittsburgh — Branch Rickey's kids are beginning to pay off. Big Klu, if well, could make a big difference. They may be a "surprise" team.

J. J. Redeker, author of the accompanying predictions, stands before the dugout at Miller Huggins Field with Red Barber and Casey Stengel.

Los Angeles—fading away. That short fence won't make "young" ball players.

Chicago—and me a Cub fan for 60 years! At least they generally beat the White Sox in pre-season games.

Philadelphia — probably should put them higher, but they just don't click for some reason.

San Francisco — Willie Mays can't play the whole outfield. Somebody has to be last. I couldn't bear to put the Cubs there again.

American League

New York—Casey Stengel, the old fox, has the philosophy for handling a wonderful array of talent. I'll go along with "Case."

Detroit—the Tigers should come to life this season. Zernial may hit better along with Kaline.

White Sox — a bang-up "keystone" combination in the infield, and good pitching; but hitting is lacking and the outfield needs strengthening.

Cleveland—presuming that Score will star again, I look for Lane to strengthen the weak spots.

Boston—with two big hitters they could go places, but their infield lacks sparkle.

Baltimore — Richards is building up a young team; he has fair pitching.

Kansas City—maybe their trades will help them surprise us.

Washington — Sievers with his home runs should give fans their money's worth, at least.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 18, Col. 5)

rified the ball homeward. Incredibly, Hoot beat the throw for a game-winning Inside the Park Home Run.

All their lives Briggs Stadium bleacherites will claim that no man in baseball history, not even Ty Cobb, ever circled the bases so fast as did inspired Hoot Evers on the night of June 23, 1950. It is one of "Dopes" most golden memories.

Box Score Footnotes

Drafted into the Army, Red Sox hurler Frank Sullivan served a full hitch in Korea. Came time for his discharge. He was examined physically at the exit point.

"You are 6 ft. 7 in. tall," observed the medic. "That's too tall for Army regulations."

Sighed Sullivan:

"NOW they tell me!"

Among umpires the incredibly good eyesight and patience of Ted Williams is a common discussion topic. Herewith an example.

Against Detroit Aug. 28, 1957 (within a few days of his 39th birthday) Ted took only one swipe at the ball all night—and won the game, 1-0.

First time Ted came to the plate he walked after six pitches. Second time he was called out on strikes after five tosses (and the plate umpire admits he could have been wrong). So far Williams hadn't swung his bat.

Third and last time up (Tiger hurler Jim Bunning threw a two-hitter that night) Ted waited out two balls, one strike, then homered into the bleachers. He finally saw a pitch he liked. Boom! Ball game won.

They're still talking about this "call" down in Louisiana. Evangeline League umpire Bill Williams ruled that Baton Rouge's Bob Reid was out when he hit a line-drive out of the park.

Why? Umps Williams solemned that if the outfield fence hadn't checkmated Lafayette's Don Zimmerman, the latter could have caught the ball.

6 different ways to increase profits with PERFECTION AIR CONDITIONERS

There's more profit for you, Mr. Dealer, when you sell and install Perfection Air Conditioning equipment. There are more features to sell—features that mean economy and comfort for your customers. And the line is complete—6 types. Where beauty is required, you find it in Perfection units.

1 TUCKAWAY SELF-CONTAINED HEAT PUMPS

Not just reverse cycle air conditioners—completely self-contained units designed and developed by Perfection as heat pumps in 2, 3½, 5 hp.

2 SILHOUETTE WINDOW AIR CONDITIONERS

Beautiful, economical thin line models in ¾ through 2 hp.

3 SILHOUETTE HEAT PUMPS

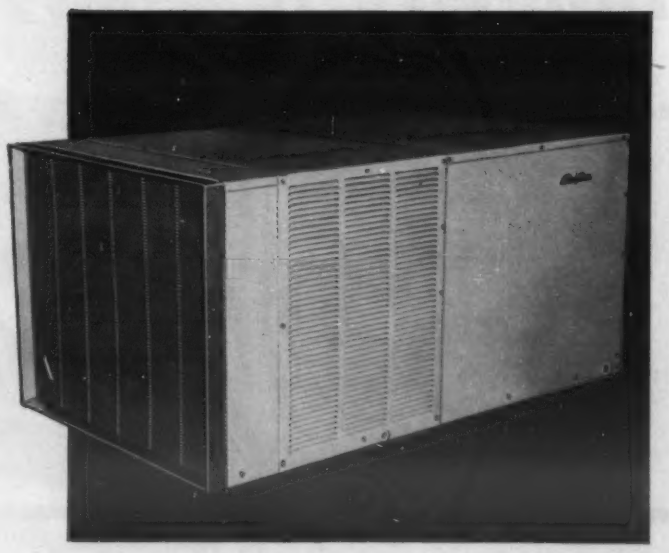
Window units in 1, 1½, 2 hp.

4 RESIDENTIAL REMOTE AIR CONDITIONERS

Air-cooled for easier and more economical installation in any type home. Available in 2, 3, 5 hp.

5 TUCKAWAY SELF-CONTAINED AIR CONDITIONING UNITS

Air-cooled, in 2, 3, 5 hp., these Perfection units can be suspended from the ceiling, tucked-away in attic, basement, transom or crawl space.



MODEL PAS-31-AH AIR-COOLED TUCKAWAY HEAT PUMP

6 COMPLETE COMMERCIAL LINE

Air-cooled units range up to 20 hp.—water-cooled package units up to 40 hp. Silent operation makes these Perfection units ideal for any commercial use.

There are a few wholesaler and dealer territories open. If you want "6 different ways to increase profits" see your Perfection Distributor or write, wire or phone Dept. N-34, Perfection Industries, Cleveland 10, Ohio.

Perfection® DIVISION OF HUPP Corporation

GUARANTEED COMFORT SINCE 1888

1958 Room Air Conditioner Ratings

Reported by Manufacturers to Air-Conditioning & Refrigeration Institute

(Continued from Page 1)

has been discarded as non-applicable to cooling capacity, says the ARI, and the manufacturers have agreed to use the B.t.u. ratings as the primary measure of capacity.

Unlike last year's ratings, which specified only B.t.u. ratings of units, the 1958 list includes the total watts input, nameplate volts and amperage, cycle and phase of motors, and the refrigerant number.

Ratings listed in the current release, and in subsequent 1958 revisions of the rating list, have been established in accordance with ARI Standard 110-58.

The ARI indicated that the final edition of the 1958 ratings may be issued about May 15.

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
ADMIRAL CORPORATION						
7SL7	4,300	800	115	7.5	60/1	12
10087	6,800	920	115	7.5	60/1	22
10GL7	6,800	920	115	7.5	60/1	22
10GL12	8,300	1300	115	12.0	60/1	22
10GS23	8,300	1320	230	7.0	60/1	22
10GL23	8,300	1320	230	7.0	60/1	22
100M23A	10,000	1480	230	7.5	60/1	22
150S12	10,500	1460	115	12.0	60/1	22
150L12	10,500	1460	115	12.0	60/1	22
150L23	13,500	2100	230	11.2	60/1	22
200L23	16,000	2350	230	12.0	60/1	22
200S23	15,500	2300	230	12.0	60/1	22
AMANA REFRIGERATION, INCORPORATED						
100LC2N	6,800	900	115	7.5	60/1	22
100LCS2N	6,800	900	115	7.5	60/1	22
100C2N-1	8,500	1200	115	12.0	60/1	22
100C3N-1	8,500	1300	230	6.0	60/1	22
75LA2N	6,900	800	115	7.5	60/1	22
100LA2N	7,900	850	115	7.5	60/1	22
100A2N	9,000	1200	115	11.0	60/1	22
100A3N	10,300	1500	230	8.0	60/1	22
130A2N	12,000	1500	115	12.0	60/1	22
130AS3N	12,300	2000	230	9.5	60/1	22
150A3N	14,100	2000	230	9.5	60/1	22
200A3N	16,000	2300	230	11.5	60/1	22
75LF2N	6,600	850	115	7.5	60/1	22
100LF2N	7,100	870	115	7.5	60/1	22
100F3N	10,000	1600	230	7.5	60/1	22
75LD2N	6,000	850	115	7.5	60/1	22
100D2N	8,400	1300	115	12.0	60/1	22
150D3N	13,100	2000	230	9.5	60/1	22
200D3N	15,600	2400	230	11.5	60/1	22

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
AIRTEMP DIVISION CHRYSLER CORPORATION						
1675-18-39	6,900	840	115	7.5	60/1	22
1675-20-39	8,000	1220	115	11.6	60/1	22
1675-20-40	8,000	1230	230	5.8	60/1	22
1600-21-39	9,000	1240	115	12.0	60/1	22
1600-22-39	8,200	1355	115	12.0	60/1	22
1600-24-40	9,600	1340	230	7.0	60/1	22
1600-26-39	8,000	1355	115	12.0	60/1	22
1615-3-142	13,800	2050	230/208	10.7	60/1	22
1600-3-142	16,000	2330	230/208	12.0	60/1	22
1750-3-39	5,000	960	115	7.5	60/1	12
1775-5-39	6,800	1140	115	11.9	60/1	22
1775-6-39	5,600	885	115	7.5	60/1	22
1775-7-39	5,600	885	115	7.5	60/1	22
1700-1-39	7,900	1325	115	12.0	60/1	22
1830-0-39	5,300	790	115	7.5	60/1	12
1875-0-39	7,500	1180	115	11.9	60/1	22
1875-0-40	7,500	1180	230	6.5	60/1	22
1800-0-40	9,000	1340	230	7.9	60/1	22
1800-0-42	9,000	1340	208	8.8	60/1	22
EMERSON ELECTRIC MFG. CO.						
ACB-10-15LT	7,000	920	115	7.5	60/1	22
ACB-20-30D	16,000	2530	230	12.0	60/1	22
ACB-13-15P	2,900	630	115	7.1	60/1	12
ACB-15-30T	10,200	2070	230	12.0	60/1	22
ACB-20-30T	16,800	3670	230	12.0	60/1	22
ACB-10-15AC	8,400	1380	115	12.0	60/1	22
ACB-1015ADR	10,300	1230	115	12.0	60/1	22
ACB-1015AD	10,300	1230	115	12.0	60/1	22

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
CARRIER CORPORATION						
51AS4-230	9,600	1550	230	8.0	60/1	12
51AS4-115	7,500	1000	115	7.5	60/1	500
51AC4-208	9,600	1600	208	10.0	60/1	12
51AC4-230	9,600	1550	230	8.0	60/1	12
51AC4-115	7,500	1000	115	7.5	60/1	500
51AS4-230Y	9,600	1550	230	8.0	60/1	12
51AC4-208Y	9,600	1600	208	10.0	60/1	12
51AC4-230Y	9,600	1550	230	8.0	60/1	12
51AC4-115Y	7,500	1000	115	7.5	60/1	500
51AS4-179	9,600	1550	230	7.5	50/1	12
51AS3-179	7,500	1210	230	5.9	50/1	12
51AS3-115A	7,500	1190	115	11.2	60/1	12
51AS3-230A	7,500	1175	230	5.9	60/1	12
51AS3-208A	7,500	1190	208	6.7	60/1	12
51AS4-115A	9,600	1470	115	12.0	60/1	500
51AS4-230A	9,600	1475	230	7.5	60/1	12
51AS4-208A	9,600	1520	208	9.6	60/1	12
51AS5-230	13,400	2520	230	11.2	60/1	500
51AS5-208	13,400	2520	208	12.0	60/1	500
51AS6-230	16,000	2540	230	12.0	60/1	22
51AS6-208	16,000	2540	208	12.0	60/1	22
51AS5-208Y	13,400	2520	208	12.0	60/1	500
51AS5-230Y	13,400	2520	230	11.2	60/1	500
51AS6-208Y	16,000	2540	208	12.0	60/1	22
51AS6-230Y	16,000	2540	230	12.0	60/1	22
51AS3-179	14,500	2520	230	12.0	50/1	22
51K3-115	7,500	1210	115	11.2	60/1	12
51K4-230	9,600	1530	230	7.5	60/1	12
51W3-115	8,000	1210	115	11.2	60/1	12
51W3-230	8,000	1210	230	5.75	60/1	12
51W3-208	8,000	1210	208	7.0	60/1	12
51W4-230	9,700	1590	230	8.0	60/1	12
51W4-208	9,700	1590	208	8.9	60/1	12
51W4-179	9,700	1590	230	8.0	50/1	12
51W4-115A	8,000	1210	115	11.2	60/1	12
51W4-230A	8,000	1210	230	5.75	60/1	12
51W4-208A	8,000	1210	208	7.0	60/1	12
51W4-230B	9,700	1590	230	8.0	60/1	12
51W4-208B	9,700	1590	208	8.9	60/1	12
51W4-208BY	9,700	1590	208	8.9	60/1	12
51AL4-230	9,800	1570	230	7.5	60/1	12
51AL5-230	13,400	2520	230	11.2	60/1	500
51W4-230BY	9,700	1590	230	8.0	60/1	12
51AC5-230	14,400	2400	230	11.1	60/1	500
51AC5-230Y	14,400	2400	230	11.1	60/1	500

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
FEDDERS-QUIGAN CORPORATION						
79DS-2	6,000	850	115	7.5	60/1	22
79CS-2	7,000	885	115	7.5	60/1	22
79D-2	7,800	1180	115	12.0	60/1	22
711DS-2	8,500	1240	115	11.1	60/1	22
711DSA-2	8,500	1260	115	12.0	60/1	22
711DSH-2	8,500	1260	115	12.0	60/1	22
711CSE-2	9,100	1130	115	11.4	60/1	22
711C-3	9,700	1620	230	8.0	60/1	22
711CH-3	9,700	1550	230	8.0	60/1	22
712C-3	10,600	1620	230	8.4	60/1	22
716C-3	12,800	2010	230	9.9	60/1	22
720C-3	16,000	2320	230	11.1	60/1	22
720T-3	16,000	2340	230	11.2	60/1	22
76CW-2	5,000	930	115	9.6	60/1	22
79CW-2	7,800	1230	115	12.0	60/1	22
79AW-2	6,000	890	115	7.5	60/1	22
711AW-2	8,500	1320	115	12.0	60/1	22
711AW-3	9,700	1640	230	8.0	60/1	22
711AW-5	9,700	1640	208	8.7	60/1	22
711BW-2	9,000	1390	115	12.0	60/1	22
711BW-3	9,700	1690	230	7.4	60/1	22
711BW-5	9,700	1590	208	8.8	60/1	22
716BW-3	12,800	2120	230	10.6	60/1	22
720BT-3	15,600	2440	230	11.0	60/1	22
816D-3	12,300	2060	230	10.3	60/1	22
811BH-2	8,000	950	115	7.5	60/1	22
811DH-3	9,200	1580	230	8.5	60/1	22
816DH-3	13,000	2200	230	10.5	60/1	22
811D-5	9,500	1530	208	8.5	60/1	22
817C-3	14,400	2090	230	10.4	60/1	22
817C-5	14,200	1910	208	10.5	60/1	22
821C-3	15,700	2510	230	12.0	60/1	22
816CS-2	11,300	1430	115	11.6	60/1	22
822C-3	16,600	2650	230	12.7	60/1	22
812CS-3	12,500	1700	230	8.5	60/1	22
816BH-3	11,000	1420	115	11.6	60/1	22
811S-2	8,000	940	115	7.5	60/1	22
821C-5	15,500	2480	208	12.0	60/1	22
816D-5	12,000	2000	208	11.1	60/1	22
811DH-5	9,100	1610	208	8.9	60/1	22
11AW-5A	9,000	1600	208	9.0	60/1	22
820D-5	14,000	2181	208	10.7	60/1	22
820DH-5	13,000	2320	208	10.7	60/1	22
816DH-5	12,000	2000	208	10.6	60/1	22
89DS-2	6,000	870	115	7.5	60/1	22
9AW-2A	6,000	895	115	7.5	60/1	22
11AW-2A	8,000	1220	115	7.5	60/1	22
11AW-3A	9,000	1720	230	9.2	60/1	22
11BW-3A	9,700	1700	230	9.2	60/1	22
16BW-3A	13,000	2200	230	11.0	60/1	22
FRIEDRICH REFRIGERATORS, INC.						
SW7S1S	9,000	1235	115	11.7	50/60/1	12
SW10025	11,700	1560	230	8.0	50/60/1	22
SW13025	17,200	2100	230	9.7	50/60/1	22
SW20025	22,100	2660	230	12.5	50/60/1	22
FRIGIDAIRE DIVISION GENERAL MOTORS CORPORATION						
AS-100-82	8,600	1270	230	5.6	60/1	22
AS-100-88	8,600	1270	208	6.7	60/1	22
AD-1004-81	7,800	1150	115	9.9	60/1	22
AI-100-82	10,000	1350	230	5.8	60/1	12
AI-100-88	10,000	1360	208	7.1	60/1	12
AI-150-82	13,600	2100	230	10.0	60/1	22
AI-150-88	13,600	2100	208	10.8	60/1	22
AI-200-82	16,500	2400	230	12.0	60/1	22
AI-200-88	16,500	2350	208	13.0	60/1	22
A30-57	4,500	760	115	7.4	60/1	22
AE7S-5711	8,200	1130	115	10.4	60/1	22
AE7S-5721	8,200	1130	230	5.5	60/1	22
AE7S-5781	8,200	1130	208	6.0	60/1	22
AE7SS-5711	6,500	880	115	7.5	60/1	12
GENERAL ELECTRIC COMPANY						
R446R-16	6,000	900	115	7.5	60/1	22
R462R-16	9,000	1400	115	12.0	60/1	22
R472R-26	10,000	1575	230	6.8	60/1	22
R473R-26	10,300	1450	230	6.8	60/1	22
R681R-26	14,500	2100	230	9.5	60/1	22
R460R-26	9,700	1550	230	7.8	60/1	22
R463R-16	8,600	1300	115	12.0	60/1	22
R435S-26	5,500	975	230	4.5	60/1	22
R475S-26	10,000	1575	230	6.8	60/1	22
R31P-16	5,600	900	115	7.5	60/1	12
R41P-16	6,700	900	115	7.5	60/1	22
R42P-16	6,700	900	115	7.5	60/1	22
R51P-16	7,700	1290	115	12.0	60/1	22
R51P-26	7,700	1290	230	6.0	60/1	22
R52P-16	7,800	1150	115	11.0	60/1	22
R52P-26	7,800	1150	230	5.5	60/1	22
R60P-26	9,300	1360	230	6.3	60/1	22
R61P-16	9,400	1300	115	12.0	60/1	22
R62P-16	9,400	1323	115	12.0	60/1	22
R71P-26	10,500	1480	230	6.8	60/1	22
R72P-26	10,500	1480	230	6.8	60/1	22
R101P-26	14,000	2130	230	10.0	60/1	22
R83P-16	5,600	800	115	7.5	60/1	12
R85P-16	7,800	1150	115	11.0	60/1	22
R85P-26	7,800	1150	230	5.5	60/1	22
R72P-26	10,500	1480	230	6.8	60/1	22
GIBSON REFRIGERATOR COMPANY DIVISION OF HUFF CORPORATION						
1-5811	10,300	1250	11	12.0	50 60/1	22
1-5812	10,700	1500	230	8.0	50 60/1	22
1-5851	10,500	1350	115	12.0	50 60/1	22
1-5832	14,500	2150	230	12.0	50 60/1	22
1-5822	16,300	2350	230	12.0	50 60/1	22
HOTPOINT COMPANY						
178AMP100	7,000	1030	115	7.5	60/1	22
118AMP100	8,000	1300	115	12.0	60/1	22
128AMP100	8,000	1375	230	6.3	60/1	22
128AML200	14,500	2440	230	11.0	60/1	22
128ADL200	16,000	2800	230	12.0	60/1	22
KELVINATOR DIVISION AMERICAN MOTORS CORP.						
RH 1041	8,000	1330	115	12.0	60/1	22
RH 1041 H	7,800	1330	115	12.0	60/1	22
RH 1042	8,000	1330	230	6.2	60/1	22
RH 1061	7,500	950	115	7.5	60/1	22
RH 1081	9,800	1380	115	12.0	60/1	22
RH 1081 H	9,600	1380	115	12.0	60/1	22
RH 1082	10,500	1475	230	7.2	60/1	22
RH 1082 H	10,350	1475	230	7.2	60/1	22
RH 1581	11,000	1470	115	12.0	60/1	22
RH 1581 H	10,850	1470	115	12.0	60/1	22
RH 1582	13,350	3030	230	8.6	60/1	22
RH 1582 H	12,900	3030	230	8.6	60/1	22
RH 2082	14,400	2770	230	11.5	60/1	22
RH 2082 H	14,300	2770	230	11.3	60/1	22
RH 2092	17,000	3700	230	12.2	60/1	22
RH 2092 H	16,700	3700	230	12.2	60/1	22
RH 1071 C	6,400	930	115	7.5	60/1	22
LONERGAN MANUFACTURING DIVISION McGRAW-EDISON COMPANY (COOLERATOR)						
S10A17	7,300	870	115	7.5	60/1	22
S10A1	7,300	1160	115	12.0	60/1	22
S10A2	8,200	1210	230	6.0	60/1	22
S10A8	8,200	1210	208	6.0	60/1	22
S15A2	12,100	2060	230	10.0	60/1	22
S13A8	12,100	2050	208	10.0	60/1	22
S20A2	14,400	1960	230	11.0	60/1	22
C10A17	7,300	980	115	7.5	60/1	22
C10A2	9,900	1510	230	8.0	60/1	22
C15A1	10,800	1400	115	12.0	60/1	22
C15A2	12,700	2070	230	10.0	60/1	22
C20A2	16,400	2220	230	11.0	60/1	22
C20A8	16,400	2220	208	11.0	60/1	22
C25A2	18,700	2640	230	12.0	60/1	22
C25A8	18,700	2640	208	13.0	60/1	22
CP5A17	4,000	780	115	7.5	60/1	12
LONERGAN MANUFACTURING DIVISION McGRAW-EDISON COMPANY (MANNING BOWMAN)						
MB10A17	7,300	870	115	7.5	60/1	22
MB10A1	7,300	1160	115	12.0	60/1	22
MB10A2	8,200	1210	230	6.0	60/1	22
MB10A8	8,200	1210	208	6.0	60/1	22
MB15A2	12,100	2050	230	10.0	60/1	22
MB15A8	12,100	2050	208	10.0	60/1	22
MB20A2	14,400	1960	230	11.0	60/1	22
MI10A17	7,300	870	115	7.5	60/1	22
MI10A2	9,900	1510	230	8.0	60/1	22
MI15A1	10,800	1400	115	12.0	60/1	22
MI15A2	12,700	2070	230	10.0	60/1	22
MI20A2	16,400	2220	230	11.0	60/1	22
MI20A8	16,400	2220	208	11.0	60/1	22
MI25A2	18,700	2640	230	12.0	60/1	22
MI25A8	18,700	2640	208	13.0	60/1	22
MP5A17	4,000	780	115	7.5	60/1	12

(Concluded on next page)

MUELLER BRASS CO.

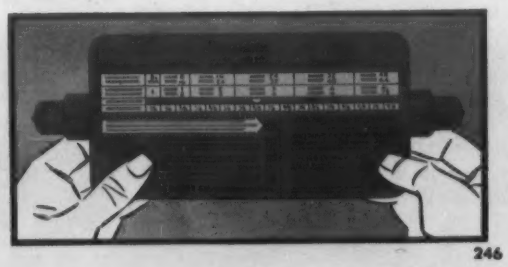
Drymaster

FILTER-DRIERS

are now available for immediate delivery!

we refused to compromise on quality . . . we wanted to give you only the very best . . . you'll be glad you waited . . . for this amazing new Drymaster—the only Filter-Drier with guaranteed "BALANCED PERFORMANCE"

This handy slide-guide is yours for the asking. It provides a quick, easy way to select the correct Drymaster Filter-Drier for every installation. Shows at a glance—the drying capacity, filtering area, flow ratings and over-all length. Write for your slide-guide today—or pick one up at your wholesaler's.



246

MUELLER BRASS CO. PORT HURON 13, MICHIGAN

1958 Room Air Conditioner Ratings

Reported by Manufacturers to Air-Conditioning & Refrigeration Institute

(Concluded from preceding page)

Model No.	Rated Cooling Capacity Btu/Hr.	Total Elec. Input Watts	Nameplate Electrical Data Volts	Amps.	Cycles/ Phase	Refrigerant No.
THE MATHES COMPANY						
90S	9,000	1480	115	11.9	60/1	22
106S	10,300	1820	230	7.9	60/1	22
90D	9,000	1480	115	11.9	60/1	22
106D	10,300	1820	230	7.9	60/1	22
135D	13,300	2200	230	9.7	60/1	22
165D	17,000	3460	230	11.6	60/1	22
90C	9,000	1480	115	11.9	60/1	22
106C	10,350	1820	230	7.9	60/1	22
135C	13,300	2200	230	9.7	60/1	22
165C	17,000	3460	230	11.6	60/1	22
122D	11,500	1800	115	12.0	60/1	22
132D	13,300	2100	230	9.8	60/1	22
21D	21,000	3130	230	13.5	60/1	22
24D	23,500	3140	230	13.7	60/1	22
122C	11,500	1800	115	12.0	60/1	22
142C	14,000	2000	230	8.2	60/1	22
21C	21,000	3120	230	13.5	60/1	22
24C	23,500	3140	230	13.7	60/1	22
MITCHELL MANUFACTURING COMPANY DIVISION OF CORY CORPORATION						
F17H-1	6,800	930	115	7.5	60/1	22
B10H-2	11,700	1700	230	7.5	60/1	22
B20H-2	18,100	2650	230	12.0	60/1	22
BA30H-2	15,500	2310	230	12.0	60/1	22
A12H-1	8,300	1330	115	12.0	60/1	22
A12H-2	8,300	1245	230	6.8	60/1	22
A15H-2	11,400	2000	230	12.0	60/1	22
A20H-2	14,800	2350	230	12.0	60/1	22
A37H-1	5,800	740	115	7.5	60/1	22
P05H-1	3,100	630	115	6.9	60/1	22
PHILCO CORPORATION						
A983-2	5,600	900	115	7.2	60/1	22
A984-2	6,600	1230	115	12.0	60/1	22
A984-11	6,600	1230	230	7.5	60/1	22
A1081-23	8,000	1200	230/208	6.7	60/1	22
A1082-2	8,000	1300	115	12.0	60/1	22
AF1082-2	8,000	1300	115	12.0	60/1	22
A1082-23	8,000	1200	230/208	6.7	60/1	22
AF1082-23	8,000	1200	230/208	6.7	60/1	22
A1086-2	7,800	1200	115	12.0	60/1	22
AF1086-2	7,800	1200	115	12.0	60/1	22
A1086-23	7,800	1200	230/208	6.7	60/1	22
AF1086-23	7,800	1200	230/208	6.7	60/1	22
A1083-2	8,000	960	115	7.5	60/1	22
A1282-2	10,100	1290	115	12.0	60/1	22
A1282-11	12,400	1670	230	7.5	60/1	22
A1582-11	13,500	2060	230	10.0	60/1	22
A2082-11	15,500	2475	230	12.0	60/1	22
A873-2	6,800	850	115	7.5	60/1	22
A882-2	5,300	880	115	7.5	60/1	22
A1072-2	8,000	1350	115	12.0	60/1	22
A1072-11	10,100	1540	230	7.5	60/1	22
A1072-23	10,100	1540	230/208	7.5/8.5	60/1	22
A1074-2	8,000	1350	115	12.0	60/1	22
A1077-2	7,800	1350	115	12.0	60/1	22
QUIET-HEET MANUFACTURING CORPORATION Subsidiary of Emerson Radio and Phonograph Corporation (QUIET KOOL)						
799	6,250	870	115	7.5	60/1	22
791	7,800	1250	115	12.0	60/1	22
792/798	7,800	1250	230/208	7.5	60/1	22
991	8,400	1300	115	12.0	60/1	22
992/998	9,400	1700	230/208	10.0	60/1	22
E10G2	10,500	1540	230	10.0	60/1	22
E13G2	13,500	1965	230	12.0	60/1	22
E20G2	16,000	2460	230	12.0	60/1	22
550	2,650	800	115	7.5	60/1	12
550	3,650	800	115	7.5	60/1	12
REMINGTON CORPORATION						
WS7F-2	6,200	1160	115	11.8	60/1	22
WS9F-2	8,200	1280	115	12.0	60/1	22
WD9F-43	8,200	1280	230	6.1	60/1	22
S09A-2	8,200	1250	115	12.0	60/1	22
WM9A-2	8,000	1300	115	12.5	60/1	22
WM9A-3	8,000	1300	230	6.25	60/1	22
WA9G-2	8,400	1260	115	12.0	60/1	22
WA9G-3	8,400	1250	230	6.1	60/1	22
WD13G-3	13,700	2150	230	11.0	60/1	22
WD20G-3	17,500	2750	230	12.8	60/1	22
WA13G-3	13,700	2150	230	11.0	60/1	22
WA20G-3	17,500	2750	230	12.8	60/1	22
CW10A62	11,300	960	115	9.4	60/1	22
CW10A43	11,300	960	230	4.7	60/1	22
CW15A43	17,400	1570	230	7.4	60/1	22
SEARS, ROEBUCK AND COMPANY (COLDSPOT)						
87134	4,300	850	115	7.5	60/1	22
76334	5,800	875	115	7.5	60/1	22
76310	8,000	1375	115	12.0	60/1	22
77415	12,000	2000	230	9.8	60/1	22
77215	14,000	1800	230	10.3	60/1	22
77420	14,000	2300	230	12.0	60/1	22
77220	15,500	2500	230	12.0	60/1	22
77020	17,000	2600	230	12.0	60/1	22
5835100	8,300	1100	115	12.0	60/1	22
5835101	8,300	1100	115	12.0	60/1	22
5834100	9,700	1500	230	7.8	60/1	22
5834101	9,700	1500	230	7.8	60/1	22
5854150	12,700	1925	230	9.8	60/1	22
5854151	12,700	1925	230	9.8	60/1	22
5857100	8,600	1260	115	12.0	60/1	22
5857101	8,600	1260	115	12.0	60/1	22
5856100	8,600	1280	230	7.5	60/1	22
5856101	8,600	1280	230	7.5	60/1	22
5856150	11,600	2000	230	9.8	60/1	22
5853100	10,200	1425	115	12.0	60/1	22
5883100	7,600	957	115	7.5	60/1	22
5852100	10,700	1430	230	7.8	60/1	22
5881100	8,000	1250	115	12.0	60/1	22
5881102	8,000	1280	115	12.0	60/1	22
5881103	8,000	1250	115	12.0	60/1	22
5880150	13,000	1960	230	9.8	60/1	22
5880152	13,000	1960	230	9.8	60/1	22
5880100	9,300	1480	230	7.8	60/1	22
5880101	9,300	1450	230	7.8	60/1	22
5880102	9,300	1480	230	7.8	60/1	22
5891104	8,600	1250	115	12.0	60/1	22
5880103	9,800	1450	230	7.8	60/1	22
5850108	12,100	1425	230	7.5	60/1	22
5885100	7,600	957	115	7.5	60/1	22
THE O. A. SUTTON CORP. (VORNADO)						
R10DD-1	8,000	1330	115	12.0	60/1	22
R10DD-2	8,000	1330	230	6.3	60/1	22
D10DD-1	9,800	1580	115	12.0	60/1	22
D10DD-2	10,500	1475	230	7.2	60/1	22
C10DD-1	6,400	930	115	7.5	60/1	22
L10DD-1	7,200	980	115	7.5	60/1	22
D10DD-1R	9,680	1580	115	12.0	60/1	22
D10DD-2R	10,300	1475	230	7.2	60/1	22
T10DD-2	12,000	1600	230	7.5	60/1	22
D13DD-1	11,000	1470	115	12.0	60/1	22
D15DD-1R	10,880	1470	115	12.0	60/1	22
D15DD-2	13,300	2030	230	8.6	60/1	22
D15DD-2R	12,900	2080	230	8.6	60/1	22
D20DD-2	14,400	2770	230	11.3	60/1	22
D20DD-2R	14,300	2770	230	11.3	60/1	22
M20DD-2	17,000	2700	230	13.3	60/1	22
M20DD-2R	16,750	2700	230	13.3	60/1	22
WEBILT CORPORATION						
BWF1	3,500	750	115	7.5	60/1	12
BWG2	4,500	800	115	7.5	60/1	12
BWJ2	6,300	850	115	7.5	60/1	22
BWL2	7,000	950	208	6.5	60/1	22
BWM2	7,000	950	230	6.5	60/1	22
BWO2	8,800	1000	115	7.5	60/1	22
BWP2	8,800	1000	115	12.0	60/1	22
BWR2	8,800	1000	208	9.0	60/1	22
BWS2	8,800	1000	230	9.0	60/1	22
BWT2	11,000	1300	230	10.0	60/1	22
BWU2	11,500	1400	115	12.0	60/1	22
BWV2	13,000	2000	208	12.0	60/1	22
BWW2	13,000	2000	230	12.0	60/1	22
BWX2	15,000	2400	208	12.0	60/1	22
BWY2	15,000	2400	230	12.0	60/1	22
WESTINGHOUSE ELECTRIC CORPORATION						
RW-150S2	13,000	2380	230	11.0	60/1	22
RW-200S2	17,000	2430	230	11.0	60/1	22
RW-100S7	8,400	910	115	7.5	60/1	22
RW-200DA2	20,000	2840	230	16.5	60/1	22
SW-100CS	10,500	1415	115	12.0	60/1	22
SW-100CS2	10,500	1815	230	9.1	60/1	22
SW-150CS2	14,500	2480	230	11.7	60/1	22
SW-200CS2	16,300	2465	230	11.5	60/1	22
SW-108M7	7,100	900	115	7.5	60/1	22
RW506	5,400	790	115	7.5	60/1	12
SW-75D7	6,400	870	115	7.5	60/1	22
SW-75C7	6,400	870	115	7.5	60/1	22
SAWC-75	6,600	1044	115	11.0	60/1	22
SAWC-752	6,600	1044	230	5.5	60/1	22
RW-755T	6,600	850	115	7.5	60/1	22
RW-75S2	7,700	1110	230	5.5	60/1	22
RW-75D	7,700	1110	115	12.0	60/1	22
RW-75D2	7,700	1110	230	5.5	60/1	22
SW-100D	8,400	1265	115	12.0	60/1	22
SW-100C	8,600	1310	115	12.0	60/1	22
RWR-100S	8,800	1200	115	12.0	60/1	22
SWR-100D2	8,800	1618	230	8.5	60/1	22
SW-100S2	9,000	1230	230	6.0	60/1	22
SW-100D2	9,600	1615	230	7.5	60/1	22
SW-100C2	9,200	1615	230	7.5	60/1	22
RWR-100S2	9,500	1580	230	7.5	60/1	22
RW-100S2	10,100	1580	230	7.5	60/1	22
RW-100D2	10,800	1450	230	7.0	60/1	22
RW-150D2	13,500	1960	230	10.0	60/1	22
RW-200D2	16,500	2430	230	11.0	60/1	22
WHIRLPOOL CORPORATION (RCA WHIRLPOOL)						
I-8100-2	9,850	1350	115	12.0	60/1	22
I-8100-3	10,800	1550	230	7.8	60/1	22
IW-8100-3	10,800	1550	230	7.8	60/1	22
D-8100-2	8,400	1230	115	12.0	60/1	22
D-8100-3	9,600	1600	230	7.8	60/1	22
D-8150-3	13,200	2000	230	9.8	60/1	22
DW-8100-3	9,300	1400	230	7.8	60/1	22
F-8100-2	8,400	1230	115	12.0	60/1	22
YORK DIVISION BORG-WARNER CORPORATION						
F107-2	7,000	1030	115	7.5	60/1	22
F112-2	8,000	1300	115	12.0	60/1	22
FS100-11	9,500	1615	230	8.6	60/1	22
FS100-19	9,500	1615	208	8.8	60/1	22
FS150L-2	11,000	1600	115	12.0	60/1	22
FC200-11	14,500	2440	230	11.0	60/1	22
FC200-19	14,500	2440	208	12.0	60/1	22
FS200-11	16,000	2800	230	12.0	60/1	22
FS200-19	16,000	2800	208	13.0	60/1	22
E50-2	4,900	850	115	7.5	60/1	22
E75-2	7,500	1310	115	12.0	60/1	22
E75-11	7,500	1310	230	6.0	60/1	22
E75L-2	6,250	970	115	7.5	60/1	22
E100-11	9,500	1685	230	8.5	60/1	22
E100L-2	9,000	1350	115	12.0	60/1	22
E150-11	14,300	2265	230	12.0	60/1	22
E200-11	16,000	2750	230	14.0	60/1	22

ARI Changes Some Temperature Conditions for Ratings Tests

WASHINGTON, D. C.—Air-Conditioning & Refrigeration Institute has announced publication of a revised ARI standard for room air conditioners. The new Standard 110-58 supersedes Standard 110-56.

Major changes in the revised standard are in temperature conditions for certain tests of room units, based on industry experience gained since the tests were first written. The new conditions also place Standard 110-58 more nearly in line with ARI Standard 210-57, relating to unitary air conditioning equipment.

The tests for which conditions have been rewritten include:

Maximum operating conditions, low temperature operation, insulation efficiency, and condensation removal. None of these establishes capacity ratings for room units, but rather, they serve to establish minimum performance requirements, ARI pointed out.

Other revisions in the 1958 version:

Clarify manufacturing tolerance on published ratings of units. The tolerance previously was stated as plus or minus 8% from published ratings; the new standard states that cooling capacity of any production unit "will be not less than 92% of the published ratings, except that power input shall not be more than 108% of the published power input rating."

Substitute the revised Underwriters' Laboratory Standard 484 for obsolete UL Standard 207 D in specifying nameplate electrical data and safety tests.

Define locked-rotor current, and include a provision that the value may be obtained from the motor manufacturer in order to avoid destroying hermetic units to make tests.

The new ARI Standard 110-58 is available from ARI, 1346 Connecticut Ave., N.W., Washington, D. C., at 35 cents per copy.

design for finish

STRAIGHT LINE PRODUCTION TO A PERFECT FINISH

EXTRA WORKABILITY

The proper kind of temper is vital in tube used for refrigeration and air conditioning purposes. VIKING Copper Tube has been produced with the best available annealing and tempering equipment, thus assuring perfect fabricating.

ABSOLUTE, UNVARYING STRAIGHTNESS

A battery of straightening machines keeps VIKING Copper Tube absolutely, unvaryingly straight. In addition, these machines precisely temper the tube, imparting to it the correct surface hardness . . . assuring ease in fabrication resulting in substantial savings in time and labor.

ELECTRONIC QUALITY CONTROL

An electronic "Brain" detects the minutest flaw or imperfection in the walls of VIKING tubes . . . automatically discarding defective tubes. Trouble-free fabrication is virtually guaranteed — operational failures almost completely eliminated.

Drawing techniques which produce copper tubes of highest quality are only part of the story of VIKING'S craftsmanship. The finishing bay takes over after all drawing operations have been completed.

Thin wall tube moves first through the electronic flaw detectors and through a preliminary straightening. Careful inspection at this point eliminates defects.

Tempering operations, cutting to specified length, de-burring and special cleaning all take place in this area before the final inspection and packaging.

Thin wall tempered tube is our business and we *know* our business.

VIKING COPPER TUBE CO.

CLEVELAND 10, OHIO

PRECISION DRAWN SEAMLESS COPPER TUBE

Trane Is Entering Residential Air Conditioning Because:

1. It Already Makes Basic Components
2. Its Policy Is To Have Complete Lines
3. This Market Could Be Its Biggest

LA CROSSE, Wis.—A "fact" sheet which discusses its entrance into residential air conditioning field, scheduled to take place this summer, has been released by The Trane Co. here.

The information is in the form of answers to questions which point up the reasons for Trane getting into this part of the air conditioning market, the type of equipment it will provide, and how these products will be sold and installed.

(In its Feb. 17 issue, AIR CONDITIONING & REFRIGERATION NEWS reported on a look into the "advance plans" of the Trane Co. for the residential field as reported in a "cover story" in *Business Week* magazine. The company's own fact sheet covers much of the same ground, but adds some new information.)

The following is the information provided in the company release:

Entering In 1958

Question—Trane will enter the residential air conditioning field in 1958. Why is Trane making this move at this time?

Trane Position—The company is making this move because:

"1) The company already manufactures the basic components—fans, coils, and compressors—used in the products that serve the market.

"2) It has been Trane policy to have a complete line of both heating and cooling products. Inasmuch as many of the basic components of residential equipment are already in use in other lines, this move into residential merely represents an extension to another application.

"3) The residential air conditioning market could be the firm's largest market. The market is apt to experience rapid growth. There is a substantial opportunity for Trane to increase sales and earnings.

"4) Sales promotion of the residential line would increase the stature of the Trane name with the general buying public and help the sale of other product lines."

Question—Is Trane entering the residential field late?

Trane Position—"Trane does not believe it is entering the residential field late. When one considers that less than 2% of all U. S. single family homes are centrally air conditioned, it is apparent that little inroad has been made in this market to date. Trane feels the ultimate in all air conditioning, be it big buildings or the home, is the central system of some kind. That is why the Trane unit will be the central type."

Question—How does this move tie in with past line broadening developments at Trane?

Trane Position—"Trane plans to enter the residential field on a step-by-step basis and the firm believes that its presence in the market will be felt by next year.

"Actually, this move into residential is nothing new for Trane. Throughout its 44-year history, Trane has been developing and announcing new products and lines to serve expanding markets. In effect, then, the move into residential represents another step forward in the established pattern surrounding Trane growth."

Question—What experiments were necessary to prove or disprove earlier judgments of the product's worth? What tests were conducted?

Have Tested Units

Trane Position—"The Trane residential units have been subjected to a wide assortment of tests at the "House of Weather Magic"—the firm's research and test center.

"(One) important test area centered around the noise factor. The new Trane unit is most competitive as far as its quiet operation is concerned."

Question—As far as the commercial aspects are concerned, how does Trane plan to launch the product in full-scale production and sales? How will Trane market the product?

Distribution Plan

Trane Position—"Basically, the Trane distribution plan includes:

"a) Sales will be handled through the firm's 96 U. S. offices and 300 field engineers as are its other lines.

"b) Sales representatives are being added who will specialize in the package products.

"c) The offices will most frequently sell directly to the installers of residential units.

'Installer Is Key'

"The key man in the sale of packaged equipment is the installer. He is normally referred to as a dealer. Trane's major effort during 1958 and the next several years will be to acquire additional dealer customers.

"Eventually, Trane hopes to have outlets in all principal cities in the United States.

"To facilitate this arrangement, Trane has established warehouse centers in Los Angeles, Chattanooga, Dallas, Miami, Kansas City, Cleveland, New York, Scranton, La Crosse, and Clarksville, Tenn. More warehouses will be added as the need arises. Purpose of the strategically located warehouses is to insure fast shipment."

Question—How about the product itself? What features will make it "different?"

Product Features

Trane Position—"While the product is still under wraps, Trane will provide:

"a) Upright furnaces suitable for closet or basement installation in five sizes—80,000 to 150,000 B.t.u. for use with gas. These furnaces will be available for heating only or for heating and cooling when used with the remote condensing unit and coil package.

"b) Add-on system, consisting of a remote air-cooled compressor and condenser installed outside the house and connected to a cooling coil within the residence. They will be available in 2, 3, and 5-ton sizes."

A typical application for the AM-4 is new "flat-back" refrigerators, where quiet, maintenance-free motors are required.

ACTUAL SIZE

Redmond AM-4 Is Designed Specifically for Refrigeration and Air Conditioning Industries

Adaptable Wherever a Long-Life, Permanently Lubricated, All-Angle Motor Is Needed

The AM-4 MicroMotor is designed and constructed to be the finest refrigeration condenser-fan motor available. It is the only motor of this type that is backed with a full two-year warranty. The AM-4 never needs oiling—an extra large quantity of lubricant is completely suspended and uniformly distributed in pure wool and nylon wicks, and permanently sealed to guarantee against oil leakage in use or shipment.

Although designed specifically for the refrigeration and air conditioning industries, the AM-4 single-bearing MicroMotor is ideally suited for other heavy-duty domestic and commercial applications where quality, long life, and permanent lubrication are important.

Write, wire, or telephone either the Redmond office nearest you, or the home office, and our sales engineers will help you adapt the AM-4 to your motor needs.

Your Nearest Redmond Engineering Field Office Has Complete Information for You

Eastern Office
850 Broad Street
Newark 5, New Jersey
Phone: Mitchell 2-3990

Southeast Office
1720 Section Road
Cincinnati 37, Ohio
Phone: Melrose 1-3153

Mid-West Office
Fair Oaks Bldg.
6525 W. North Ave.
Oak Park, Illinois
Phone: Village 8-5721

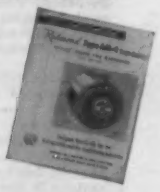
Southwest Office
210 Suburban Building
5526 Dyer Street, Dallas,
Texas Phone: FOrest 8-4461

Western Office
11526 Burbank Blvd.
No. Hollywood, California

MAIN OFFICE
201 Monroe Street
Owosso, Michigan
Phone: Saratoga 5-5151

FREE BROCHURE

For the complete story on the AM-4 motor—dimensions, performance, operational data, and suggested applications—write the Redmond Co., Owosso, Michigan for the "AM-4 Bulletin."



ADVERTISED IN The Saturday Evening POST

The Standard of Dependability

Redmond COMPANY, INC.
OWOSSO, MICHIGAN

THE BIG NAME IN SMALL MOTORS

To Carry Perishables In Dual Temp Refrigerator Built for Jet Airliners

BOGNOR REGIS, Eng.—Lec Refrigeration Ltd. has evolved a dual temperature refrigerator for installation by British Overseas Airways Corp. on its "Britannia 103" and 312 and "Comet IV" jet airliners.

Of 8-cu. ft. capacity and divided into two refrigeration compartments, one for normal food temperature, the other for frozen foods, the Lec unit is claimed to have been built "to exacting specifications" for BOAC.

Frozen food compartment can be converted to normal temperature on return flights to Great Britain when produce and fruit will be brought back, it was explained. BOAC has placed an initial order for 65 of these refrigerators.

Problems, said Lec, included the making of a large capacity unit to fit the smallest possible space due to airliner limitations. Of lowest weight consistent with efficiency, the cabinets will be powered by specially-made 112-v. units. They will operate at 28 v. on Comets.

Lec already makes refrigerators for Israeli Airlines and recently installed a special item in an American admiral's quarters aboard his flagship.

Dravo Buys Shops, Land Of Pittsburgh Screw Co.

PITTSBURGH—Dravo Corp. announced purchase of the shops and land of Pittsburgh Screw & Bolt Corp.'s Graham Works on Neville Island for $787,500.

The property, which extends from the main channel to the back channel of the Ohio River just west of the Dravo plant, includes approximately 40 acres of land, 260,000 sq. ft. of shop floor space, and 7,000 sq. ft. of office floor space. Dravo already owns approximately 125 acres on Neville Island.

Pittsburgh Screw & Bolt announced plans in 1956 to transfer operations from its three Pittsburgh plants to a new plant near Mt. Pleasant, Pa.

Carl B. Jansen, president of Dravo said: "In recent years, as we have expanded and diversified our product lines, the need for additional shop and storage space has become more and more apparent. These new facilities will give us an opportunity to consolidate and centralize certain of our operations in a way that will contribute to greatly increased efficiency."

Noting that the sales agreement need not become final until Dec. 31, 1958, Jansen said that Dravo will use the intervening months to determine what operations can best be carried on in the new facilities and lay plans for occupation.

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzales—25¢ each.

Mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Kirkpatrick Heads New ARI Group

Mobile Air Conditioning and Refrigeration Section To Establish Standards for Transporation Equipment

WASHINGTON, D. C. — A new "Mobile Air-Conditioning and Refrigeration Section" has been organized as one of the production-sections which make up the Air-Conditioning & Refrigeration Institute, it was announced by Managing Director Geo. S. Jones, Jr.

Henry O. Kirkpatrick of American Mfg. Co., Div. of Standard Forge & Axle Co., Inc., was named chairman of the new group, which brings to 15 the number of ARI product-sections.

"The new section was formed as the result of a series of meetings of manufacturers of refrigeration equipment for trucks, trailers, and railway cars, who determined that affiliation with ARI as a product-section would provide the best method for establishment of recommended standards for such equipment," the announcement said.

Although the name for the new section includes "air conditioning," it was felt that for the time being the group would concern itself with refrigerating equipment for trucks, trailers.

However, the reference to air conditioning was left in the title so that steps could be taken at a later date to include manufacturers of automotive air conditioning equipment, if desired, it was pointed out. Many current members of ARI manufacture automotive equipment, although their membership is based on production of other types of equipment.

Of the 10 companies represented at the organization meeting, five already were members of ARI, and four of the others have become members of ARI and the new section, whose membership now includes:

American Mfg. Co.; Coldmobile Div., Union Asbestos & Rubber Co.; Dole Refrigeration Co.; General Motors Corp., Electro-motive Div.; Hunter Mfg. Co.; Kold-Hold Div., Tranter Mfg. Co., Inc.; McGraw-Edison Co.; Transicold Corp.; and York Div., Borg-Warner Corp.

The first meeting of the new section, at which a "scope" and other details of organization will be considered, is scheduled to be held within a month or so.

Meanwhile, Chairman Kirkpatrick has been authorized to name a committee to begin work on formulation of a test procedure and rating method for mobile refrigerating equipment. All manufacturers of truck and trailer refrigeration equipment will be invited to join the new section.

Aerotech Becomes Subsidiary Of United Electric Controls

WATERTOWN, Mass. — United Electric Controls Co. announced addition of Aerotech Specialties, Inc., Glastonbury, Conn. as a subsidiary.

Aerotech Specialties designs and manufactures probes for measuring velocity, direction, pressure, and temperature of gases and liquids.

No Matter what the Size... Sporlan gives ANY Air Conditioning Installation PEAK PERFORMANCE Right Down the Line!

Systems from ¾ to 100 tons are kept perfectly dry with the famous **Sporlan Catch-All** filter-driers.

THE See-All

The amazing new **Sporlan See-All** shows you at a glance the degree of dryness and the amount of refrigerant the system is carrying.

Sporlan Solenoid Valves with the Power Packed Blue Seal Coil defy burn-outs.

Only Sporlan Thermostatic Expansion Valves for air conditioning offer the Flow Master element, which minimizes valve hunting... smooths out evaporator performance regardless of size.

Sporlan Refrigerant Distributors give uniform distribution for any number of circuits regardless of load or evaporator temperatures. They permit a wide range of coil applications... thanks to the Sporlan interchangeable nozzle!

Buy Sporlan Right Down the Line from your wholesaler for your next air conditioning installation, and no matter what the size of the job, Peak Performance Right Down the Line will be yours!

SPORLAN VALVE COMPANY

7525 SUSSEX AVENUE ST. LOUIS 17, MISSOURI

EXPORT DEPT. 85 BROAD STREET, NEW YORK 4, N. Y.

They'll Do It Every Time

by Jimmy Hatlo

IT'S A LEMON, IF YOU ASK ME! THIS IS THE THIRD TIME I'VE HAD TO BRING IT IN! IT JUST STOPPED FOR NO REASON AT ALL! WHY, I EVEN TAKE IT OFF WHEN I'M FLIPPING FLAPJACKS, SO AS NOT TO JAR IT....
H'MMM... ZAT SO? IT DIDN'T JUST HAPPEN TO FALL IN THE MEAT GRINDER, DID IT? AND THIS DENT IN THE CASE... WERE YOU RUN OVER LATELY?
THEY NEVER EVEN TOOK IT OUTA THE CASE, TO HEAR THEM TELL IT... THE WATCH JUST BEATS ITSELF TO DEATH...
YEAH... OL' GLIMMY HEARD ALL THE SAD TALES BEFORE. YOU DON'T NEED AN X-RAY EYE TO SEE THROUGH THE SQUAWKERS!
8 TO 5 SHE HEAVED IT AT HER OLD MAN'S SKULL— THAT'S PART OF HIS SCALP IN THE MAIN-SPRING!
JEWELERS
WATCH & CLOCK DEPARTMENT
LISTENING TO THE TESTIMONY OF THE GAL WHO'D LIKE A BRAND-NEW WATCH FOR FREE...
THANX AND A HAT TIP TO LEWIS M. FRANKLIN, 607 FIFTH AVE., NEW YORK 17, N.Y.
JIMMY HATLO
© 1958, KING FEATURES SYNDICATE, Inc., WORLD RIGHTS RESERVED.

Industrial Air Conditioning Enjoys a Manhattan Boom!

RECESSION talk doesn't bother manufacturers, contractors, and consulting engineers who are engaged in the industrial air conditioning business. They're going great guns—especially in New York City, where Gothamites are erecting more than forty million square feet of new office building space. Every rentable inch is air conditioned, of course.

Moreover, tremendous amounts of money are being spent to air condition *existing* skyscrapers in America's biggest metropolis. Prime example of this latter action is the job being done at 230 Park Ave.—which is described by its consulting engineering firm (Consetini Associates) as the largest air conditioning insertion into an existing building ever undertaken.

Work on this gigantic "insertion" was begun in September, 1957; and the cooling will not be available until the summer of 1959. Consetini's "inserted" air conditioning installation bears an estimated cost of 5½ million dollars, and is rated at 3,000 tons.

Credits for this remarkable rehabilitation air conditioning system are given much as they are in a movie or at the tag-end of a TV show. For example (at 230 Park Ave.): system by Carrier; air moving equipment by Westinghouse, Sturtevant Div.; cooling tower by Phillips; pumps by Gould; controls by Powers Regulator; filters by Continental Air Filter.

Returning to our theme of that boom in air conditioned skyscrapers now occurring in Manhattan, here's what's going on.

Office Building Construction

	No.	Rental Area
Completed	19	4,913,000
Under Construction—Completed 1958	17	6,458,000
Under Construction, 1959-1960	8	7,091,000
Completed 1957 and Under Construction	44	18,462,000
Completed 1947-1956	64	16,810,000
Total Completed and Under Construction	108	35,272,000
Completed Previous Boom Period (1925-33)	138	30,400,000

Above figures represent a 40% increase over Manhattan's office space a dozen years ago. Moreover, these *new* piles of steel, glass, and masonry, which are leapfrogging street-by-street up the narrow island's length and breadth, contain more office space than the total already existing in any other city in the world!

This under-construction combined project equals—believe it or not—all the new office building space in all the rest of America put together. And then half again as much! Except for paying the rent ($4 to $8 a sq. ft., averaging about $6.50), there isn't a sweaty brow to be found among Manhattan owners or tenants.

Now being built in this year of 1958 are the following fully air conditioned New York City skyscrapers:

750 Third Ave. (at 46th St.), 34 stories, 630,000 sq. ft.; 730 Third Ave. (45th-56th Sts.), $5,125,000, 27 stories, 350,000 sq. ft.; 630 Third Ave. (at 41st St.), 21 stories, 176,000 sq. ft.; 200 E. 42nd St. (at Third Ave.), $12,000,000, 30 stories, 350,000 sq. ft.

The News Annex, 230 E. 42nd St., 18 stories; 355 Lexington Ave. (at 40th St.), 22 stories; 360 Lexington Ave. (at 40th St.), $7,000,000, 24 stories, 300,000 sq. ft.; 575 Lexington Ave. (at 51st St.), 34 stories, 580,800 sq. ft.; Union Carbide & Carbon Corp., 270 Park Ave. (47th-48th Sts.), $46,000,000, 42 stories, 1,150,000 sq. ft.

410 Park Ave., 21 stories, 181,000 sq. ft.; Pepsi Cola building, 500 Park Ave., eight stories; 660 Madison Ave., 22 stories, 400,000 sq. ft.; Corning Glass Co., 717 Fifth Ave., 28 stories; Time & Life building, 1261-79 Sixth Ave., $70,000,000, 47 stories, 1,400,000 sq. ft.

Milliken building, 1041 Sixth Ave., eight stories, 106,000 sq. ft.; Union Dime building, 111 West 40th St., 29 stories, 500,000 sq. ft.; 1437 Broadway (40th-41st Sts.), $5,000,000, 18 stories, 160,000 sq. ft.; 2 Broadway (Produce Exchange), 30 stories, 1,300,000 sq. ft.; Chase Manhattan Bank, 28-40 Nassau St., $94,000,000, 60 stories, 600,000 sq. ft.

100 Church St., $28,000,000, 20 stories, 710,000 sq. ft.; 110 William St., 31 stories, 682,000 sq. ft.; 45 Wall St., 27 stories, 370,000 sq. ft.; International building, 80 Wall St., 33 stories, 248,000 sq. ft.; Northern Insurance Co., 81 Maiden Lane, 13 stories, 140,000 sq. ft.; and 128 Maiden Lane, $10,000,000, 17 stories.

Curious thing about this burgeoning bower of buildings is: why are they concentrated in the most chokingly congested sections of Manhattan? Dispersal and decentralization, supposed to be the watchword in postwar construction, has gone by the board, apparently.

People still like to do business congestedly in New York City. However, while these skyscrapers rise, gigantic air conditioning systems go right up with them. And that "takes the heat off" congestion. Another suprising thing:

The low birth rate of the '30's would not normally be considered a boon to construction. Yet it has dug a powerful spur into this current office building boom. New blood from 17 to 25 is in short supply, and is expected to remain so until at least 1960. Because of less-than-adequate-schooling in the last generation—as we are hearing on all sides now—the actual shortage is even more acute in terms of office "help."

You simply can't hire stenographers, clerks, office boys—or junior executives—nowadays unless your headquarters are air conditioned. Q.E.D.

By the time he's 70, the average man will spend 20 years at each of his major pursuits—working and sleeping. The great outdoors and indoor amusement will consume seven years each. He'll spend five years getting his clothes and whiskers on and off, six years eating and smoking, two years playing cards, and one year on the phone. The other three years? You guessed it: Just waiting for someone.—*Horizons.*

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

Trade Mark reg. U.S. Pat. Office; Est. 1926

AIR CONDITIONING & REFRIGERATION NEWS

Copyright 1958, Business News Publishing Co.

F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: $6.00 per year; 2 years, $9.00; 3 years, $12.00. All other countries: $10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

EDITOR & PUBLISHER, George F. Taubeneck
EDITORIAL DIRECTOR, Phil B. Redeker
ASSOCIATE EDITOR, C. Dale Mericle
ASSISTANT EDITORS: John Sweet, Hugh Mahar, George Hanning, Robert Lacey
TECHNICAL EDITOR, Frank Versagi
STATISTICAL EDITOR, John MacLean

GEN. MGR., Warren Jones
GEN. PROD. MGR., Walter Schuler
ADV. PROD. MGR., A. M. Barrow
SUBSCRIPTION MGR., Rosalie Ashley
READER'S SERVICE MGR., Vincine Mogyorodi

PRESIDENT, Edward L. Henderson
ADV. MGR., Robert M. Price
WESTERN ADV. MGR., Allen Schildhammer
ASST. ADV. MGR., Joe Sullivan
ADVERTISING REPRESENTATIVES: Rex Smith, Frank Taylor
ADVERTISING OFFICES:
New York, 521 Fifth Ave., MUrray Hill 2-1928-9, Robert M. Price, Frank Taylor
Chicago, 134 S. LaSalle St., FRanklin 2-8098, Allen Schildhammer, Rex Smith
Detroit, 450 W. Fort St., WOodward 2-0924, Joe Sullivan
Los Angeles, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon

Member, Audit Bureau of Circulations. Member, Associated Business Publications.

VOLUME 83, NO. 15, SERIAL NO. 1,516, APRIL 14, 1958

"A newspaper conducted on the true and natural principles of such a publication ought to be the register of the times, and faithful recorder of every species of intelligence. It ought not to be engrossed by any particular object, but, like a well-covered table, it should contain something suited to every palate."—*John Walker.*

Handy Way to Subscribe

To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on commercial and residential air conditioning, heating, commercial and home refrigeration: manufacturing, contracting, distributing, retailing, and servicing. Read the Industry's newspaper for profit every week. Only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10.00 per year.

AIR CONDITIONING & REFRIGERATION NEWS 4-14-58
450 W. Fort St., Detroit 26, Mich.
Send the NEWS every week for: ☐ One Year $6. ☐ Three Years $12.
☐ Payment Enclosed ☐ Bill Me ☐ Bill Company
Name.....
Company.....
Street.....
City..... Zone..... State.....
IMPORTANT: Company's Type of Business.....

Office Bldg. Cooling—Who's Responsible for Success?

(Concluded from Page 1)

space in Fort Worth rents at an average of $3.60 per sq. ft. a year.

"Another important thing is the accessibility of all mechanical equipment involved so that walls, for example, don't have to be torn down to get at equipment or machines moved out merely to replace a shaft," Luper said.

"Can you take into account the changes that may be needed if the tenants change? Do all systems perform as specified? If not, why not? And who is responsible? Whose is the responsibility to balance the system and check its operation?" were among the questions Luper put before the panel.

"I think the architect and engineer have one prime responsibility—to give the owner the most B.t.u. per dollar value," declared Woltz, the architect. "I think that involves the person you call the peddler.

'Architects Have Much To Learn . . . '

"I think many architects, I'm speaking personally now, have a great deal to learn about heating, air conditioning, building materials, etc.," Woltz also said. "We come out of school full of theory. I personally appreciate calls from salesmen. A great deal of our practical knowledge comes from that source."

Asserting that architects and engineers are "quite conscious of the cost of space," Woltz commented that "there's not enough coordination between top management of architects and engineers and their draftsmen.

"Many times, too," he admitted, "specifications are written on personalities, and there are too many times when opinions which have been formed about materials and equipment get the upper hand in writing specifications.

Sees Necessity of Mutual Trust

"I don't know why the public has the feeling that every contractor is a crook. We ought to get together, quit bid-peddling, and trust each other," Woltz suggested.

"Our big problem in air conditioning is, or should be, to determine what kind of system the building owner should have," commented Love, the engineer.

"We're also inclined to talk about systems in a terminology that the owner doesn't understand, that is, double duct, etc., rather than the results the owner is really buying," Love said. "There's a tendency to sell equipment rather than conditions.

When Space Is Limited Costs Usually Go Up

"The owner also has to be told by the engineer how much air conditioning will cost. Incidentally," Love reminded owners, "when space is limited, costs of equipment and installation will probably go up.

"Who makes the system work? A lot depends on what the owner expects," Love declared. "He may have bought a zone system, but often he expects it to provide individual room control."

"First big problem of the contractor," asserted Beals, "is to make a profit despite unfair competition, labor problems, taxes, etc.

"The architect and engineer can solve this problem of unfair competition if they have internal fortitude," Beals said. "Is there any reason why architects, engineers, and owners can't go out of their way to see that only reliable contractors get the cooling job?

"It's more difficult to do that on public work," Beals admitted, "but even that is being done in west Texas 'to protect the public,' " he explained.

"Architects and engineers also could save money for themselves with a good, reliable contractor," Beals emphasized.

"Too many owners and architects devote too much thought to the exterior of the building and not enough to the problems of mechanical equipment," he also complained.

Offering two suggestions, Beals said, "I'd like to see separate bids on all mechanical equipment, and qualifying all those who are allowed to bid. I don't think we have vicious contractors but simply some lacking in experience."

'How Can Small Contractor Gain Reputation?'

Questioned as to "how can a contractor get a reputation as a 'reliable contractor' if only 'reliable contractors' are allowed to bid?" Beals suggested that "the small contractor can get experience on small jobs while building up an organization to handle big jobs. After all, we started out small ourselves," he added.

Here Woltz, the architect, commented, "I wouldn't hesitate to engage a small contractor if the man is financially responsible and has had experience working with mechanical contractors established in business."

Asked why mechanical engineers aren't usually hired to supervise installation of mechanical equipment, Woltz explained, "The architect's fee isn't large enough to pay for this. We could probably get much better mechanical work done this way, but there is a point of no return which must be considered."

On the matter of zone vs. room control Luper, the building manager, expressed the view that "zone control will cover generalized situations but individual room control gives the least amount of trouble."

How long a guarantee does the building owner expect? was the query.

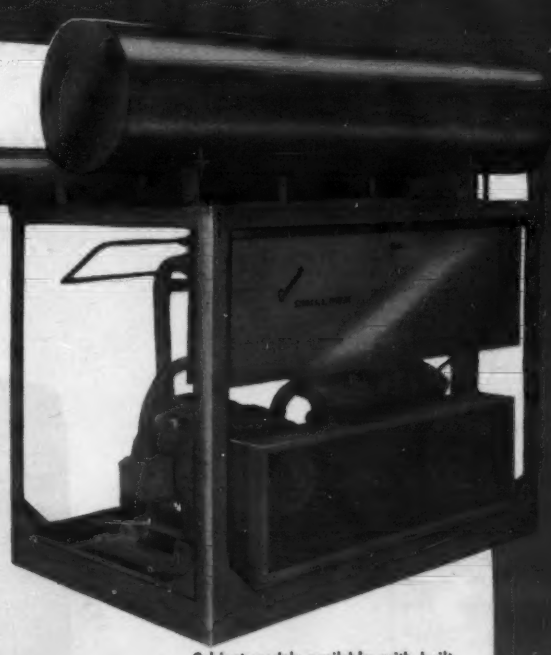
"Reasonable" was as specific as Luper would get, but he added that "the owner, of course, would like the equipment to last the life of the building."

Contract Awarded To Design Cooling for 7 Post Offices

WASHINGTON, D. C.—General Services Administration announced it has moved toward air conditioning post offices in seven South Carolina communities.

Contracts totaling over $150,000 have been awarded to AEA Engineers, Inc. of Charlotte, N. C. for preparing designs for air conditioning and other electrical work in the post offices in Georgetown, Darlington, Dillon, Marion, Orangeburg, Sumter, and Walterboro.

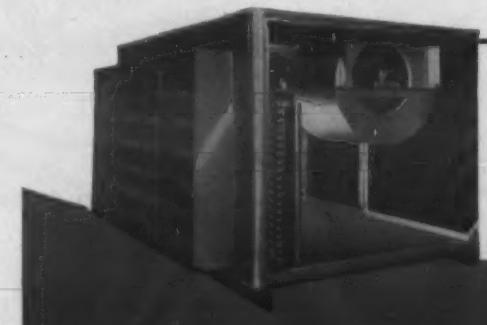
THE ALL NEW, COMPACT
CHILLPAK
SELF-CONTAINED CHILLER UNIT
SATISFABRICATED BY GOVERNAIR
LOW
- INITIAL COST
- INSTALLATION COST
- OPERATING COST



Cabinet models available, with built-in or remote evaporative condenser.

Yes, Governair now offers a new, completely self-contained water chiller unit . . so compact that the 60-ton model, for instance, is only 53" wide, 82" high, 101" long overall. Standard equipment includes heat exchanger and built-in capacity reduction at no additional cost. Each CHILLPAK is carefully factory-tested to assure reliable operation.

By using Governair's copyrighted "Satisfabricated" method, you can "design" your unit to **best** suit your specification and space requirements. Working from 10 basic models, over 68 flexible combinations . . . from 10 thru 120-ton capacity . . . are available. Write for details, or consult with your local Governair representative for the complete Governair "Satisfabricated" story.



Governair's Air Unit Conditioners provide the perfect companion to the CHILLPAK unit, offering a complete range of capacities . . . from 3 thru 150 tons. Again, by using the "Satisfabricated" method, these units can be tailored to fit even the most unusual space limitations.

GOVERNAIR

ORIGINATORS OF COMPLETELY PACKAGED AIR CONDITIONING
4640 N. SPENCER, OKLAHOMA CITY, OKLAHOMA

Survey Shows Most Dealers Make Fair Profit On Air Conditioning Jobs or 'Pass Up' Work

Find Biggest Headache To Be 'Incompetent Installers'

DETROIT—While the biggest percentage of air conditioning dealer contractors responding to a survey made by the NEWS felt that they are getting a fair price for the jobs they install, "bad pricing" was named by many of them as a major obstacle to faster growth of sales, and to desirable profits from their own operations.

By "bad pricing" is apparently meant an "unrealistic" price quoted for installed jobs, which has sometimes tended to demoralize the market. Only 4% of those replying named "lower prices" as their answer to the question "is there any one element that could give air conditioning sales a big push?"

Survey results in tabular form are published in this article based on answers to the question: "What percentage of the air conditioning jobs you sell go at a price that gives you a fair profit? Any other comments on price problems."

Some of the more pertinent individual comments on this vital question are offered here for the benefit of industry members at both dealer and manufacturer level.

Same skein was woven through the answers to the "fair profit" question. Here are a few.

Worried that the over-all air conditioning dealer-contractor business is degenerating, Robert L. Terrell, Farnsworth Heating & Supply Co., Bristol, Tenn. declaimed that, instead of competent contractors, nowadays every type of tradesman and appliance dealer is installing air conditioning.

'Poor Competition Makes It Hard'

His company, he says, "maintains day and night service, runs eight trucks, two cars, has 20 mechanics, and two engineers." Competition from the aforementioned sources "makes it real hard on us.

"We are trying to hold our air conditioning sales to at least 25-30% markup on cost of materials, truck, and labor, and we are losing far more of the sales than we are getting," Terrell complains. "In 1956 Farnsworth got 98.57% of all air conditioning sales made in Bristol, not counting window units. Now we are getting 30% because so many more plumbers, electricians, sheet metal shops, etc., are in the business."

Thomas J. Garrard, D & G Air Conditioning Co., Tampa, Fla., looks at the subject from a slightly different angle. He reports that "All of our jobs are figured at a fair profit. If we are not successful with a proposal at a fair profit, we are not interested."

'Inexpensive Cooling Just Isn't So'

Garrard maintains "All manufacturers in their advertising should refrain from trying to fool the public into how 'inexpensive' it is to install air conditioning. If it is installed properly, price of a system is not exorbitant. But it is not "inexpensive' and should not be sold as such," he argues.

Along that same line, J. A. Wier, Jr., White & Wier, Inc., Athens, Ga., comments that his firm sells a job at a fair profit "100% of the time or we pass. New concerns going into business fail to include a service reserve. They usually price under us by this amount." He cautions, "They will find out if they last long enough."

'Reasonable Profit'

Another similar comment from a southern dealer: "Except for mistakes in estimating or unforeseen job conditions that throw extras into the cost and which are not collectable as such, we price to get a reasonable profit on each job and walk away if we can't get the right price."

Trying to maintain high standards, this firm does "not spend much time on prospects that are not willing to pay more to secure a job that will allow us to use better equipment installed to give a good comfort condition.

"Needless to say," it was added, "there are many, many jobs that we do not bid on or qualify before wasting time on layout, etc. Over 90% of our installations come out at a profit that we feel satisfactory."

On the other side of the coin, O. B. Lund, Havre, Mont., decries the fact "The profit picture on perhaps a third of our jobs is not what it should be."

"Competitive pricing," insists Frank B. Self, A & M Supply Co., Inc., Ft. Worth, Texas, "is so tight that insufficient margin is left for profit in operations to carry any wholesale company through 'bad months.' At the low markup necessary for volume, it becomes practically impossible for two good sales months to cancel out or counteract one poor one.

"This," Self continues, "merely means that both the wholesale and retail outlet in the air conditioning industry today are failing to make enough money on individual sales to justify the amount of work, effort, and time involved in operations."

'Take Some Jobs For Experience'

A novel note was sounded on the fair profit idea by a contractor in a huge northern

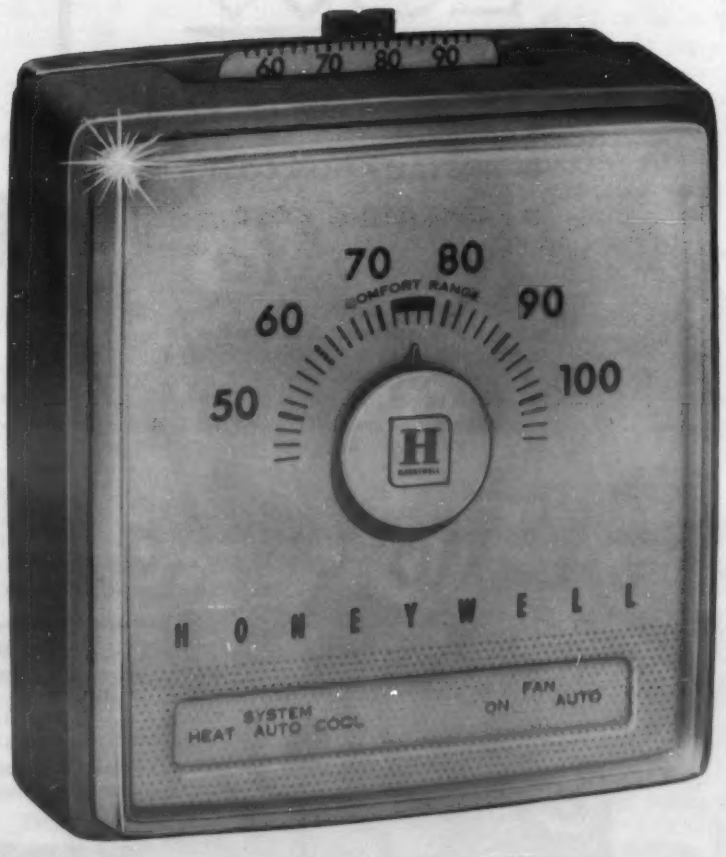
(Continued on next page)

How Many Jobs Yield Fair Profit?

5—What percent of the air conditioning jobs that you sell, go at a price that gives you a fair profit?

100 Percent	*48% of the dealers*
75 to 99 Percent	*33% of the dealers*
50 to 74 Percent	*11% of the dealers*
25 to 49 Percent	*5% of the dealers*
10 to 24 Percent	*3% of the dealers*

Honeywell Residential Air Conditioning Thermostats fit any system!



T 870 Thermostat—New deluxe heating-cooling series permits semi-automatic or full-automatic changeover. Six models, seven sub-bases give up to 42 combinations for every type of heating and cooling—single- or two-stage. Switching for remote reset available. Anticipation on all stages of heating and cooling. Easy installation. Dust-free mercury switches. Silver-bronze finish.

A survey made by the NEWS among several hundred leading air conditioning dealers and contractors on their prospects and plans for 1958 turned up so many excellent comments that the editors have broken down publication of results into three parts.

Part III, covered in this issue, presents opinions on sales obstacles and what to do about the price bugaboo. A final section will be published later.

Part I, published in the March 31 issue, covered what those responding to the survey felt about their prospects for this year and on what segment of the market—residential, commercial, or industrial—they intended to concentrate.

Part II, published in the April 7 issue, presented opinions on promotional methods at both the retail and manufacturer level.

Dealers' Profit Problems--

(Continued from preceding page)

metropolitan area. He said "We make a fair profit on 90% of our jobs. But we will take some jobs for the novelty or experience, marking any loss or lack of profit to 'education.' We believe it to be very vital to remain progressive."

Ray J. Aldrich, Aldrich Air Conditioning, Rapid City, S. D., holds that "the larger jobs have been unrealistically competitive." He points out that his firm makes a fair profit on about 75% (in numbers) and 50% (in over-all volume) of its jobs. "Price problems come largely from too many retail outlets and too much dumping of products by both manufacturers and dealers," he states. "For instance, prices on ¾-ton room air conditioners have ranged in one season locally from $325 to $129."

A realistic comment was offered by R. L. Harris, Harris Bros. Refrigeration Co., Kansas City, Mo., when he said "We figure all jobs with a fair profit and realize that profit unless a job goes sour. We are not able to get a price which compensates for the chance a dealer takes in being responsible for the manufacturer's, the architect's, the engineer's, and the subcontractor's mistakes."

N. V. Bearden, Desert York Co., Las Vegas, Nev., takes the view that "All jobs we sell render a fair profit. Some are of minimum profit and markup. This would amount to about only 20% of our total sales.

"The fact that some of our competitors are working on a no-profit basis and others are closing shop, indicates that our outlook is sound and has withstood the trials and tribulations throughout the years. We find that when a customer pays more for our products, he is firmly convinced he is getting more and consequently is much more of a booster.

'Sell Quality Job Over Cheap One'

"Because," Bearden maintains, "we receive a legitimate profit, we are able to service his equipment and give him top grade work and installations, therefore, the customer understands he has realized something for his money. Selling a quality job over a ridiculously priced 'cheap' job is sometimes an obstacle.

"However," he points out, "I must say that our sales engineers have overcome this in most cases. Since this city of Las Vegas has undergone a boom construction period and has now leveled off into somewhat normal, there are not too many of the 'cheapies' around."

A bit of advice was offered by Edward L. Fahnestock, president, Fahnestock, Inc., Wichita, Kan.. in explaining that 25% of his firm's jobs make a good profit and 75% run from "bad to worse."

His contention: "The air conditioning industry—from top to bottom—got itself into this price mess and placed it at the mercy of 'chiseling' builders and inexperienced dealers and installers."

'Why We Lose Jobs'

Toledo's James A. Foley, Inc. holds out for better things. "We won't sell unless we can make a fair profit. However, we lose many more jobs than we sell for two reasons: costs are too high from the manufacturers, which force small margin on his prices for the air conditioning contractor to overcome; and the entry of newcomers into the industry with no previous air conditoning experience.

"This latter," it was stated, "includes the personnel in many instances from the manufacturer right down through the direct and indirect channels to and including the installers."

'Mfrs. Dumping Hurts'

Refrigeration of North Jersey, Inc., Dover, N. J., indicates "price problems arise from many situations," detailing:

"Manufacturers' 'dumping' obsolete or discontinued items, surplus stock, etc. Frequent changes of distribution policy from manufacturer to dealer. Too many retail outlets for the available market, forcing prices below normal levels. Too many dealers and contractors new in the business, many of them just along for the ride, who do not know their costs or often show a complete disregard of their responsibility to the customer. The customer, frequently short-changed with inadequate equipment poorly installed is saddened but wiser when this happens," the company avers. "It is time some housecleaning was begun."

Taylor D. Ward, Ward Air Conditioning Co., Orlando, Fla., insists "profit margins are much too close considering the hazards of installation, credit, expense of free service, etc."

'Lack of Knowledge Biggest Problem'

Ward says "The biggest price problem seems to be a lack of knowledge on the part of installers of accurate costs of installing, service reserve, overhead, etc."

W. P. McCarty, president of McCarty Bros. Equipment Corp., River Forest, Ill., chidingly questions: "Do you admit there are contractors in the air conditioning business who do sell jobs without a fair profit?"

He goes on: "It is this type of contractor who is encouraged by the manufacturer, who is the greatest threat to the entire in-

(Continued on next page)

Standardize on Honeywell—the industry's most complete air conditioning control line—for: • Thermostat and sub-base matched for the job; semi-automatic or automatic changeover; heating and cooling—single- or two-stage. • Exact switch and thermostat combinations to fit requirements. Complete your control systems with Honeywell's especially designed and pre-wired control panels and pressure controls. For full details of Honeywell's Residential Air Conditioning controls, call your local Honeywell office, or write: Minneapolis-Honeywell, Dept. AN-4-74, Minneapolis 8, Minnesota.

T 87 Thermostat — Standard Residential Air Conditioning thermostat for semi-automatic changeover. 12 matching Q405 sub-bases provide the most flexible control combination available. Features the popular styling, decorator cover, and engineering advantages of the world-famous Honeywell Round. Dust-free mercury switch. Anticipation on both heating and cooling.

Honeywell

First in Controls

'We Can't Get Jobs by Low Bids and Make Enough To Stay In Business'

(Continued from preceding page)

dustry at the present time."

Outlining his firm's method of approach, Burton D. Linne, Air Conditioning Maintenance Co., Chicago, says "We do not attempt to be low bidder on any jobs. All our jobs bring a fair profit or they simply are not undertaken. We are in a process of diversifying *into* air conditioning. Our capital is not completely committed and other operations bring revenue. We can afford," he believes, "to let 'price' buyers walk. And surprisingly few do," he insists.

Albert E. Dorr of Comfort Inc., Oklahoma City agrees. "We can not get jobs on the low bid method and make enough profit to stay in business," he states. "Therefore, about 90% of our jobs are sold at a preference or by out-engineering the competition. We handle a high-priced unit and insist on quality installation and consider 15-20% the minimum profit in order to stay in business."

'Quality Suffers When Priced Low'

Thomas S. Ryan of Murphy & Miller, Inc., Chicago, points to a fair profit on 80% of his firm's jobs. He maintains, "To reduce price and protect fair profit, what can suffer (no contractor's desire) but quality?"

L. A. Morris of Five Towns Refrigeration Co., E. Rockaway, N. Y., ups that profit picture to include all the jobs his firm does. He states: "Competition being so tough, we are concentrating on more operating efficiency and better purchasing of material for jobs."

A far west contractor says he gets a fair profit on only 50% of his air conditioning installations.

But a Chicago firm counters stating it gets its fair share on 90% of the jobs.

Without indicating what per cent of its installations bring a fair profit, a Florida dealer comments "Building contractors are constantly bargaining for better prices without consideration of efficiency and capability of equipment installed in the home being constructed."

Then C. E. Cunningham of F. H. McDonald, Inc., Miami, Fla. brings out what he considers to be an unfair position. "Although we make a fair profit on 95% of our jobs, most of the business we lose is to a one-man shop that has no overhead and belongs to the union and does his own work. We feel this is the most unfair competition we have."

Frank Bader, Bader Sales & Service, Inc., Highland Park, N. J., comments: "We make a fair profit on all the jobs we win. We figure all our jobs on a basis of net cost for equipment, sundries, parts, labor ('guestimated'), warranties, etc., and add 15% for overhead and 10% profit.

"If we," asserts Bader, "can't get the job for this price we don't want it. We also add 10% to all subcontracts—which we find our competition does not do."

Another far western contractor contends "I plan a profit on all jobs. That is why my volume is small."

Other comments from various points:

"We make a fair profit on 80% of our installations. Air conditioning, in our area at least, is the last of the 'clean' businesses."

'We Try Not To Make Sales Without a Fair Profit'

"We try not to take any sales unless there is a fair profit." Then this supplier adds, "But what this industry needs is not just fair profits, but good to excellent profits."

"Our profit percentage is small on room air conditioners, but on residential and commercial air conditioning we have gotten a fair profit on most installations."

"We figure our profit at 10% on window unit installations, 25% of commercial jobs, 50% of residential air conditioning, and 70% of built-up jobs."

"Our firm tries to sell all jobs at a price that will make some profit. Tract work and commercial bid work offers very narrow profits. On negotiated and self-engineered jobs we can generally get a slightly higher profit."

Another contractor breaks his over-all profit down in this fashion: "Only about 40% of the jobs give a 'right' profit; 30% just fair; 30% too low."

Another comments: "Where ductwork is a major part of the job, the percentage of profit dwindles."

(To Be Continued)

Mr. Mulligan solves his warehouse problem
I WISH MANUFACTURERS WOULD SELL US SMALLER QUANTITIES
COME OVER TO THE WAREHOUSE — THERE'S A TRUCK FULL OF VALVES FROM XYZ MFG. CO., AND I DON'T KNOW WHERE TO PUT THEM
THEY'VE GOT TO GO SOMEWHERE WE MAY NEED THEM. HOLD ON— I'LL BE RIGHT OVER
MULLIGAN REFRIGERATING CO. P. MULLIGAN President
OHH!
LISTEN, MAC—I'VE GOT TO GET RID OF THIS STUFF
NO! NOT IN MY BASEMENT. IT'S FULL NOW WITH THAT LAST ORDER OF PIPE, REMEMBER?
FRAGILE
TO WAREHOUSE
DELIVERY SLIP
PURCHASING AGENT
OK. WE'LL BUILD A BIGGER WAREHOUSE
FRAGILE
OVER HERE... OOPS!
MULLIGAN REFRIGERATING CO. WAREHOUSE UNDER CONSTRUCTION
Buy from your complete air conditioning and refrigeration wholesaler—your handy warehouse for every air conditioning and refrigeration need
WHO NEEDS A WAREHOUSE NOW? STOP THE MACHINERY!
ABC REFRIGERATION SUPPLY CO? SEND OVER SIX XYZ VALVES— WE NEED THEM THIS AFTERNOON
THIS IS MORE LIKE IT
COMPLETE AIR CONDITIONING & REFRIGERATION WHOLESALER
HEADQUARTERS FOR FREON REFRIGERANTS

PROVED DEPENDABLE... When you need a refrigerant, be sure to see your complete air conditioning and refrigeration wholesaler... and then be sure you *always ask for Freon**. Choose "Freon" and you choose a refrigerant backed by more than 26 years of DuPont technical and manufacturing leadership. Choose "Freon" and you choose a refrigerant that sets the industry's standard for purity and dryness.

Buy where you see this sign...

FREON® REFRIGERANTS

**Freon and combinations of Freon- or F- followed by numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon refrigerants.*

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

American Radiator Sales Down In '57

NEW YORK CITY—Due primarily to lower home equipment sales based on the housing decline and price cutting brought a sharp drop in domestic sales last year of American Radiator & Standard Sanitary Corp., the company said.

The corporation and its foreign subsidiaries' sales were down to $491,472,000, off $29,740,000 from record 1956 levels, according to the annual report.

Profits declined more than sales, slipping to $12,650,949 including dividends received from foreign subsidiaries, or $1.10 a share, in 1957 from $19,647,693, or $1.40 a share, the preceding year.

Sales from the company's overseas operations increased to $124,032,912 in 1957 from $121,035,511 the previous year and foreign dividends received by the firm rose to $5,852,051 last year from $5,355,573 in 1956.

Dinner Dance To Highlight Buffalo ASRE Ladies Night

BUFFALO—A dinner dance will be a feature of annual ladies' night held by the local American Society of Refrigerating Engineers chapter Saturday, April 26.

Cocktails will be served at 7:30 p.m. in the University club followed by dinner at 8. Dancing to Dave Cheskin's orchestra will continue to 1 a.m.

Members and friends of local chapter American Society of Heating & Air-Conditioning Engineers will be guests.

Apartment To Be Cooled

ELIZABETH, N. J.—What is said to be the first fully air conditioned apartment house to be erected in this city will go up beginning April 15.

Five-stories with 67 suites, the $1,000,000 building will be largest of its kind.

Speakers Bureau Set Up

Cooperative Direct Mail and Newspaper Drive Supported by 15 Philadelphia Cooling Firms

PHILADELPHIA—A total of 15 companies participated in a cooperative direct mail promotion effort with the Air Conditioning and Refrigeration Div. of the Electrical Association of Philadelphia and Philadelphia Electric Co. last year stressing benefits of commercial, industrial, and residential air conditioning.

One direct-mail brochure was sent to 15,000 business prospects asking "How can any business compete in today's market without air conditioning?" Another 15,000 were sent to homeowners stating "You can get so much for so little with air conditioning. Comfort can be yours for pennies a day."

Both folders were well illustrated and carried the name, address, and phone number of each participating company along with product trade names. In addition to this direct-mail campaign, eight pages of editorial copy and product advertisement featuring value of air conditioning appeared in the Philadelphia *Inquirer* one day.

Lead article, written by S. M. Cameron, EAP president, reviewed the "exceptional growth" in room air conditioner and central residential system sales.

A series of other articles covered stated advantages of present-day air conditioning: "Air Conditioning Cuts Household Chores," "Home Cleared of Food Odors by Air Conditioning," "Indoor Plant Life Found Improved," "Young and Old Hit by Humidity," "Aids Hay Fever Victims," and "Tips on Buying Air Conditioners."

Member companies of EAP accompanied this editorial copy with ads of their own featuring their products.

A second facet of the educational program attendant to the promotion was the Residential Air Conditioning Speakers' Bureau. Over 20 engagements were made during the year with various civic, fraternal, and professional groups. An essential part of the lectures was the distribution of a booklet "Facts on Home Air Conditioning."

An air conditioning training course was also held for dealers, contractors, and industry men in the Edison Bldg. one evening a week for 8 weeks.

Western Show--

(Concluded from Page 1)

reports Fred J. Tabery, exhibit manager with offices in the Exposition Hall.

Sessions of the Western Air Conditioning Industries Association technical conference, being held in conjunction with the Exhibit, are scheduled daily from Wednesday, May 7, through Saturday, May 10.

The conference opens with a general technical session starting at 7:30 p.m. Wednesday night, covering such subjects as "Large Systems for Air Conditioning"; "Results of Some Studies on Air Pollution" and "Low and "High Temperature Environment Chambers."

A Thursday afternoon, May 8, session starting at 2 p.m. will be a symposium on "School House Environmental Control" with speakers covering such subjects as "Steam and Hot Water Systems"; "Radiant Heating Systems"; "Heating, Ventilating, and Cooling Systems"; "Central Air Systems"; "Unitized Direct Fire Systems"; and "As the Architect Sees It."

At 7:30 p.m. Thursday night there will be a symposium on "Air Cleaning with Reference to Particle Size, Filter Testing and Smog Control."

Starting at 2 p.m. on Friday, May 9, a symposium on "Air Conditioning Existing Buildings" will have individual panelists covering problems of Owners, Mechanical Engineers, Structural Engineers, Contractors, and Architects.

The general technical session starting at 7:30 p.m. Friday night will cover "High Temperature Hot Water Systems"; "Water Conservation"; "Air Conditioning Existing Residences"; and "Residential Heat Pumps."

Saturday morning will see the final two sessions running concurrently, starting at 9:30 a.m. One will be a panel discussion on "Market Refrigeration" and the other will cover "Codes and Standards."

Letter Tells Prospect What Dealer-Distributor Can Do For Him—List Varied Facilities

DOTHAN, Ala.—For many years, a "Here's what we can do" letter has been producing dividends in residential and commercial air conditioning contracts for Vance Equipment Co., Mathes and Chrysler Airtemp dealer-distributor here.

Like other enterprising contractors, Vance Equipment Co. maintains a prospect file produced from contacts with builders, architects, from Dodge reports, and similar leads. There are as many as 15 names added in this way each week.

As soon as the prospect's name is received, Vance immediately shoots off a letter built around the "Here is what we are equipped to do" theme.

Following a pleasant introduction, the letter in a few short paragraphs gives the reader some of its outstanding accomplishments.

Then follows a list of facilities which Vance has to offer, such as its engineering department, sheet metal shop, its fleet of eight radio-equipped service trucks, a complete listing of parts and materials carried in stock for every type of job, the total years of engineering experience of the personnel.

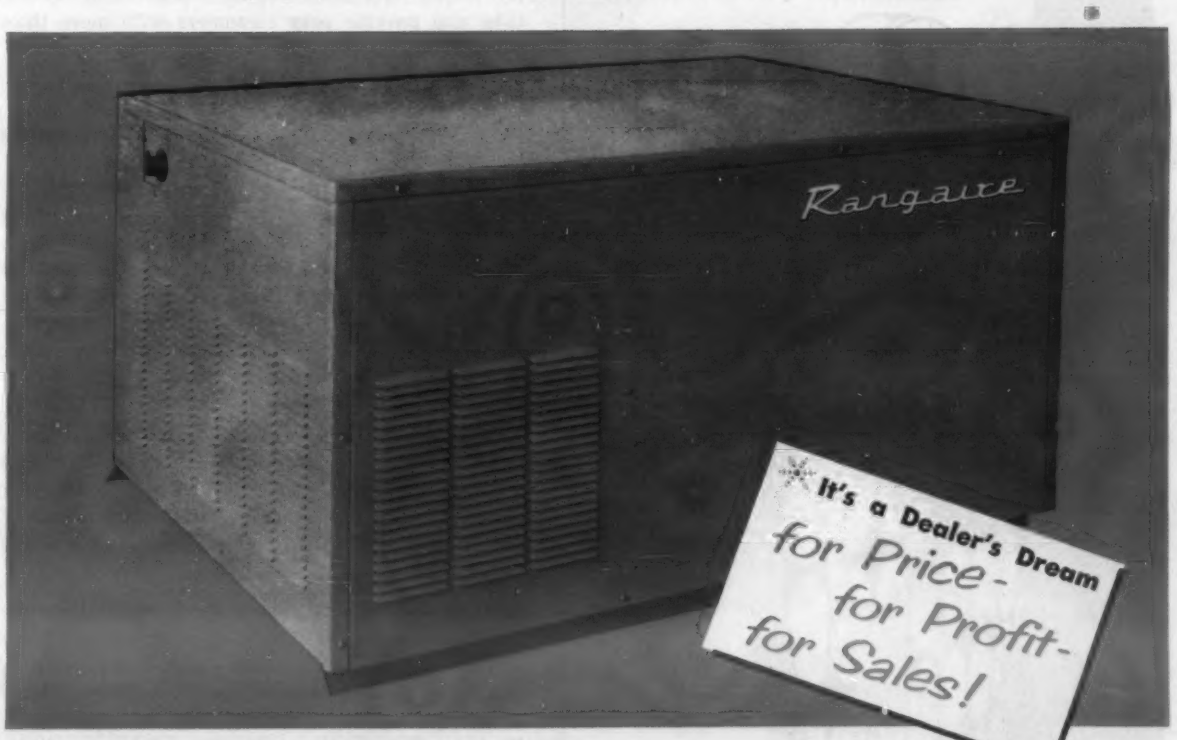
By the time a prospect has read through, he is bound to be well impressed with Vance's capacity and to keep this in mind whenever he plans an actual air conditioning installation.

Some proof of the letter's effectiveness may be found in the fact that the Alabama contractor consistently finds recipients have put the letter away "for later reference."

Where Competition's Hot...

Cool 'em with

Rangaire



Rangaire Has the Extras that Mean More Sales

Imagine! air conditioning that costs less to install, less to operate (up to 30 per cent less) than competitive brands. It's a dealer's dream come true. And on top of that, Rangaire has lots more sales-paced extras to cool the hottest competition. Just look at them!

A Complete Line Of Units To Fit Every Need
A Price To Fit Every Budget
Easy Installation — Completely Packaged
Color Harmonized — Cabinet Blends Into Surroundings
All Components, Extra Large Capacity
Proved In Nation's Heat Belt
Extra Long Life
Factory Guaranteed

A Rangaire dealer-franchise makes good sense because Rangaire dealers have what it takes for sales.

Get the Facts-

Fill out and mail the coupon today!

CI COBELL INDUSTRIES INC.
CLEBURNE, TEXAS

Please send complete information on Rangaire franchise.

NAME_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—*at the Address Given in the News Item*

Cooling Towers Designed on Double-Flow Plan

New, complete line of "Permatowers" has recently been announced by Marley Co., Dept. AC&RN, 222 W. Gregory Blvd., Kansas City 14, Mo.

Permatowers are built on the double-flow design used in industrial towers and "Double-Flow Aquatowers." Permatowers are constructed for maximum resistance to corrosion. Reinforced polyesters, phenolic and kralastic resins, and resin-protected laminates provide greater durability and minimize maintenance, the firm said.

All models are equipped with totally enclosed motors.

Powdered Acid Cleaner Removes Rust, Scale

Availability of "Key-Mix 28" for use in air conditioning field has been announced by Key Chemicals, Inc., Dept. AC&RN, 2416 E. Huntingdon St., Philadelphia 25.

Key-Mix 28 is a dry powdered inhibited acid blend, designed for use as an acid cleaner—to remove hard water scale, rust, algae, and similar deposits.

While its cleaning action is similar to that of hydrochloric (muriatic) acid, Key-Mix 28 offers a claimed minimum hazard in accidental contact with the skin. Spillage presents no problem.

Completes 'Pass-Thru' Refrigerator Line

A complete line of "Pass-Thru" refrigerators was recently announced by Foster Refrigerator Corp., Dept. AC&RN, Mill at N. Second St., Hudson, N. Y.

This type of refrigerator is designed to give efficient, speedy service, and eliminates costly steps, Foster claims.

It offers nine self-contained models from 15 to 95 cu. ft. and six remote models from 21 to 100 cu. ft. in the line, it was explained.

Switch Features Beryllium Copper Plate

Class 4 "Tyniswitch" is a new design incorporating a patented mechanism with bias and stresses in a single piece beryllium copper blade. The fixed mounting of the blade midway between the actuating and contact ends of the blade gives a claimed exceptional shock and vibration resistance, according to the manufacturer, Detroit Controls Corp., Dept. AC&RN, 5900 Trumbull, Detroit 8.

This side-mounted switch is listed at 15 or 10 amp., 124/250-v. a.c., non-inductive, ½ or ⅓ hp., 125/250-v. a.c. It is available in any one of four operating force ranges.

Introduces Dry-Type Automatic Filter

A compact, automatic dry-type air filter, known as the "Far Air Roll-Kleen" type H automatic filter, has been introduced by Farr Co., Dept. AC&RN, P. O. Box 45187, Airport Sta., Los Angeles 45.

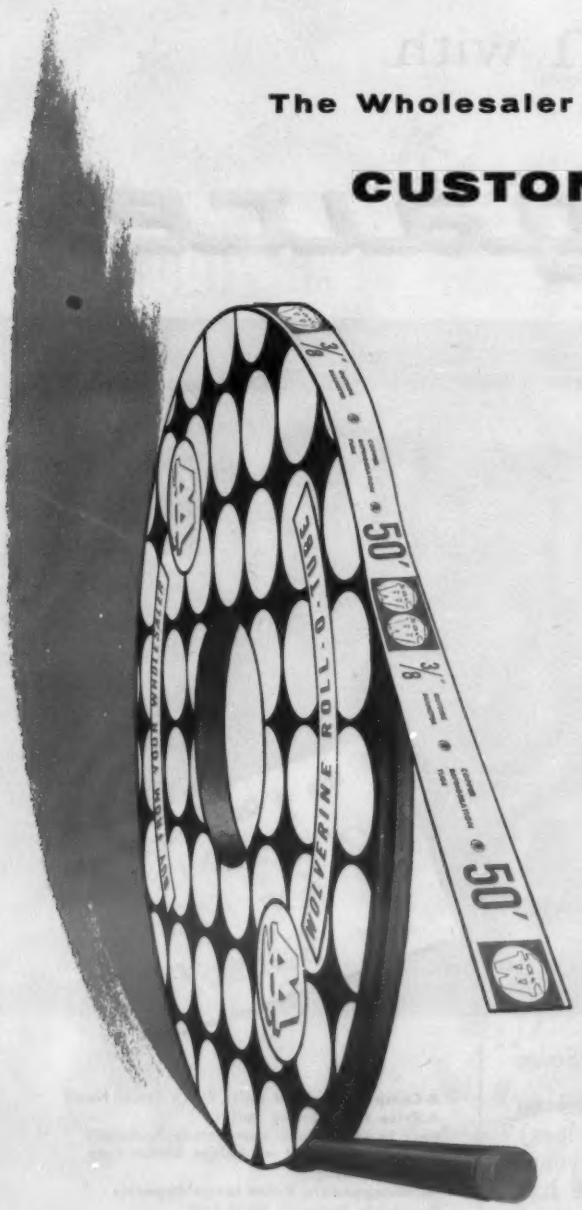
Roll-Kleen type H filter is designed for use as a simple attachment for all types and models of air handling units. It features a heavy-gauge metal frame which holds a large, replaceable roll of glass fiber filtering media and a power driven take-up spool. Electrical controls govern the automatic movement of the media across the face of the filtering area, it was explained.

Features include high or low velocity, high efficiency, large dirt holding capacity, minimum maintenance requirements, and a large effective filtering area in proportion to the unit's over-all size, it was added.

OPPORTUNITY FOR SALES: Number 4 in a Series

The Wholesaler and

CUSTOMER SERVICE



By selling Wolverine copper refrigeration service tube you provide your customers with more than tube alone.

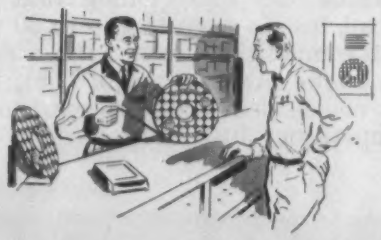
FOR EXAMPLE:

In the exclusive Wolverine Roll-O-Tube® carton your customers have a packaging device that: (1) *dispenses* the tube from a handy, built-in reel; (2) *simplifies* identification and opening because of its convenient, color coded, zip-quick gummed tape opening; (3) *serves* as a perfect storage spot—*protects* unused tube against damage and dirt until needed again. It *never* has to be removed from the carton.

AND THAT ISN'T ALL!

Wolverine also provides its cartoned refrigeration tube with a new, plastic end seal that: (1) gives positive sealing against moisture and dirt; (2) can be used again and again to maintain cleanliness; (3) removes the necessity for cutting off mechanically sealed tube ends thus eliminating the actual wastage of tube.

Next time a customer asks for refrigeration tube point out these exclusive Wolverine benefits. They add up to the kind of SERVICE that results in complete customer satisfaction . . . and repeat business for you. For more information about Wolverine products and services write for your copy of the Wolverine Refrigeration Catalog.



MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY

CALUMET & HECLA, INC.
CALUMET DIVISION
URANIUM DIVISION
GOODMAN LUMBER DIVISION
WOLVERINE TUBE DIVISION
In Canada
CALUMET & HECLA OF CANADA LIMITED
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO. LTD.
UNIFIN TUBE DIVISION

WOLVERINE TUBE
DIVISION OF
CALUMET & HECLA, INC.
17226 Southfield Road
Allen Park, Michigan
Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES

EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, NEW YORK

Has Cooling Unit For Large Walk-Ins

Designed for fast, economical installation in large walk-in freezers and low temperature storage rooms, new model LC cooling unit is said to require only four connections: liquid, suction, drain line, and electricity. No auxiliary flow control devices or heat sources are requird, according to manufacturer Betz Div., Bohn Aluminum & Brass Corp., Dept. AC&RN, Danville, Ill.

LC features a built-in vapor heating system in which electrically heated vapor circulates by gravity through the coil in its own hermetically sealed circuit.

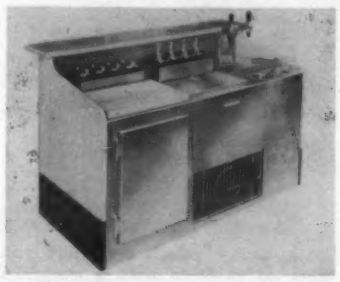
Entire vapor hermetic defrost cycle is automatic, beginning at any predetermined time, ending when the frost is gone, and automatically adjusting to heavy or light frost loads.

Fan Produces Air Pattern Uniformly

Development of a new, direct connected orifice ring fan, designed for industrial ventilation, drying, and smoke and fume removal, and which utilizes an aerodynamic blade design to produce a uniform air pattern was announced by Chicago Blower Corp., Dept. AC&RN, 9863 Pacific Ave., Franklin Park, Ill.

This unit, type "DC," employs the airfoil design of the blade to produce a high pressure characteristic, yet maintain a low noise level. By also designing the hub to be in equal proportion to the wheel surface, "dead spots" or partial stalling are eliminated, the manufacturer states.

Offers Combined Soda Fountain-Snack Bar

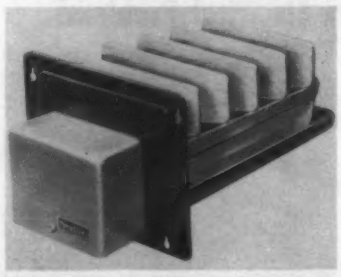


"Snac Bar" is a compact, combined soda fountain and sandwich or snack bar in one unit. It is 5½ ft. long by 27 in. wide with self-contained compressor and carbonator made by Gay Bar Soda Fountains, Inc., Dept. AC&RN, 104 Fifth Ave., New York City 11.

Standard equipment includes four syrup jars with stainless steel pumps, four crushed fruit or salad jars with stainless steel covers and ladles.

Soda and water draft arms, located above removable drip tray over sink section, dispense cold soda, plain water, or finished mixed drinks from an instantaneous cooler at a rate of 300 6-oz. glasses per hour, the company said.

Can Install Humidifier In Straight Plenum



A new humidifier, known as model 711 counter-balance unit, may be easily installed in the straight plenum of any warm air heating plant, according to the manufacturer, Skuttle Mfg. Co., Dept. AC&RN, Milford, Mich.

To further simplify the installation, the manufacturer markets the new humidifier as a package deal completely assembled, including "Vapoglas" plates and stainless steel rack. Said to be impervious to rust and corrosion, model 711 uses an "Oven-King" glass evaporating pan which is easy to clean.

Additional advantages claimed for the new design are: self-adjustment to varying water pressures and a reversible seat.

Wall Heater Vents Through-the-Wall

A new addition has been made to the "Safti-Vent" line by H. C. Little Burner Co., Dept. AC&RN, San Rafael, Calif.

It is an 8,000 B.t.u., low-priced wall heater, vented through-the-wall to eliminate chimneys.

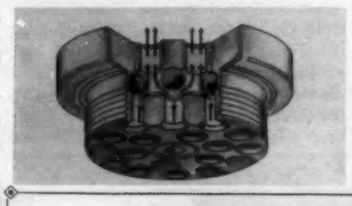
Designed for safe and economical heating of individual rooms, this unit provides both low installation cost as well as savings in operation costs. Models are available for recessed installation or for flush mounting on wall.

Develop Ball Valves In New Concept

New "BV" ball valves have been introduced by Ball Valve Co., Dept. AC&RN, 55120 Oak St., Kansas City, Mo.

They are claimed to offer a new concept in suction and discharge valves for heavy-duty ammonia compressors of all types.

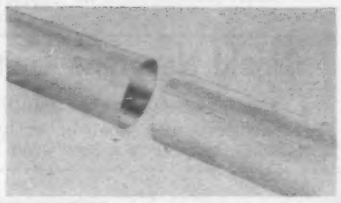
The flat "plate" or "poppet" has been replaced with multiple steel balls—resulting in less resistance, better seating, greater life, and improved compressor performance, the firm said.

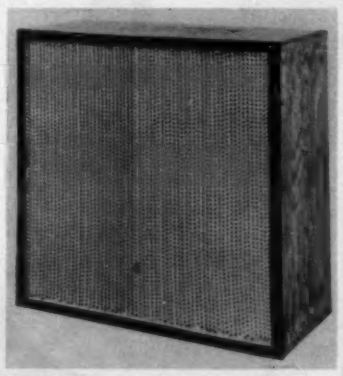


Telescopic Connector Eliminates Notching

A new telescopic connector has been developed by Duc-Pac, Inc., Dept. AC&RN, of E. Longmeadow, Mass.

It is claimed to eliminate notching during the installation of stack ducts. Named "Adjusta-Duct," this new telescopic connector merely slides in or out.





Filter Combines 2 Types of Fibers

A new filter medium for all series of "Absolute" filters has been announced by Cambridge Filter Corp., Dept. AC&RN, Syracuse, N. Y.

This new medium, consisting of a combination of selected glass and asbestos fibers, give Absolute filters claimed increases in filter efficiency and capacity, and in fire, temperature, and humidity resistance. Minimum efficiency is now 99.97% based on removal of 0.3 micron (0.0000118 in.) diameter particles. At the same time the rated capacity of the popular 24 by 24 by 11½-in. size at 1 in. w. g. resistance has been increased to 1,100 c.f.m.

Diaphragm-Operated Valves Introduced

A complete line of diaphragm-operated valves, designed for instrument-actuated control of temperature, pressure, or flow, has been announced by Sinclair-Collins Valve Co., Dept. AC&RN, 454 Morgan Ave., Akron 11, Ohio.

Featuring V-port design, said to afford extremely precise modulation of flow because of its tapered variable port area, these valves are offered in both direct and reverse acting types.

Intended for steam, air, liquid, or gas service up to 250 p.s.i., S/C diaphragm-operated valves are available in sizes ranging from 1/16 through 2 in. NPT (direct acting) and ⅛ through 2 in. NPT (reverse acting).

BLUEPRINT for LEADERSHIP

in AIR COOLED equipment for commercial and industrial use

Recognizing a trend in commercial and industrial air conditioning to air-cooled equipment, General Electric maintains a position of leadership to enable G.E. Dealers to keep pace. General Electric's complete air-cooled line enables you to offer the widest selection of ceiling- and floor-mounted units —in capacities that cover the needs of prospects, regardless of their requirements.

LEADERSHIP

Air-cooled ceiling-mounted units

General Electric *Air-Cooled* Ceiling-Mounted Units are completely self-contained. Take no floor space—may be shelf-mounted. 3 and 5 ton capacities. Ideal for stores, offices, factories—including Zone-by-Zone installations for large users.

LEADERSHIP

Air-cooled ceiling-mounted split systems

Consist of *remote condensing unit* that may be stationed anywhere, inside or outside—and *handsome, lightweight air-handling unit* that may be shelf- or ceiling-mounted, with or without ductwork. Capacities range from 3 to 10 tons.

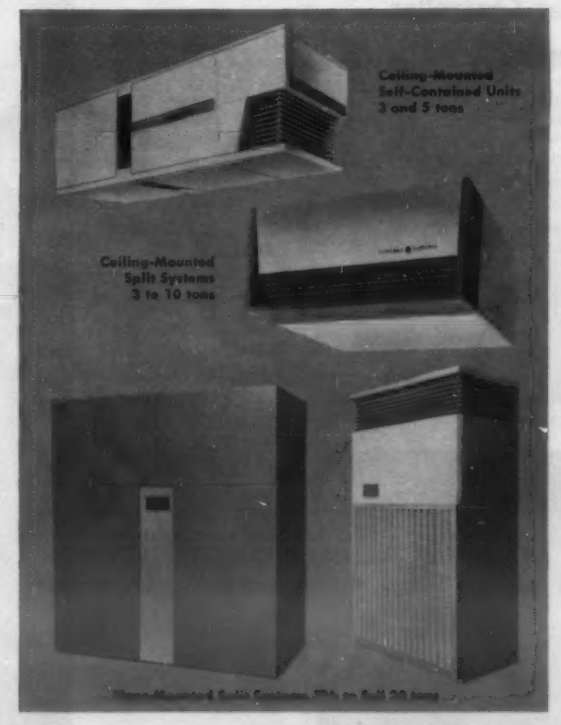
LEADERSHIP

Air-cooled floor-mounted split systems

Consist of *remote condenser* that may be stationed anywhere, inside or outside—and *handsome air conditioner* that may be stationed in or away from area served. Capacities from 7½ to full 20 tons.

General Electric also offers a complete line of water-cooled, self-contained equipment from 3 to 30 tons. Zone-by-Zone installation of General Electric units provides many advantages over central plant systems.

All units carry General Electric's 5-year warranty on sealed motor-compressor. Heating coils may be added.



A BIG PROFIT PLAN FOR YOU

Quality products are only the beginning! Your General Electric BLUEPRINT FOR LEADERSHIP Plan gives you a course in selling—attractive financing plans—walloping national advertising and promotion—guided local advertising—and the selling power of the General Electric name. Contact your nearest General Electric Distributor or mail the coupon today. General Electric Company, Commercial and Industrial Air Conditioning Dept., 5 Lawrence St., Bloomfield, N. J.

In Canada: Canadian General Electric Co., Ltd., Montreal

Progress Is Our Most Important Product

GENERAL ELECTRIC

ACD6

General Electric Company
Commercial and Industrial Air Conditioning Dept.
5 Lawrence Street, Bloomfield, N. J.

I am interested in signing up with General Electric so that I can benefit from G.E.'s Blueprint for Leadership Plan.

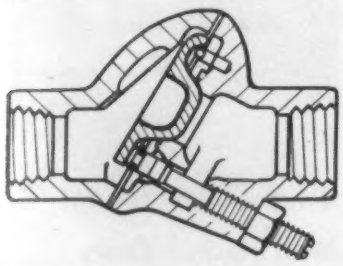
Name_____

Firm_____

Address_____

City_____ Zone____ State_____

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—*at the Address Given in the News Item*



Can Adjust Flow Control Valve

A new, low cost flow control valve, said to permit precise control of air, gas, or low pressure hydraulic flow with unrestricted return has been announced by Valvair Corp., Dept. AC&RN, 454 Morgan Ave., Akron, Ohio.

Known as the "Micro-Trol," the new valve features locked screw adjustment and a unique combination of controlling elements, a threaded stem and molded nylon flapper. The lower range of flow rates is metered by adjusting the position of the ground cylindrical stem within a concentric bore in the valve body. As the regulating portion of the stem clears the bore, the stem end contacts the flapper, lifting it off its seat.

Recorder Controller Comes In 2 Sections

A variable-range humidity and temperature recorder controller of high accuracy is now available from Serdex, Inc., Dept. AC&RN, 12 Bowdoin Sq., Boston 14.

The two-section instrument provides humidity readings claimed to be accurate to ±3% R.H. within its operating range of 15% to 95% R.H. at temperatures from 32° to 130° F.

Direct reading of the recorded humidity and temperature readings and control limit lines may be taken through the indicator window in the sensing section.

Portable Humidifier Uses Styrene Sheet

Now utilizing "Campco S-300" modified styrene sheet in its new, portable humidifiers is Swan Humidifier Co., Inc., Dept. AC&RN, Ballston Spa, N. Y.

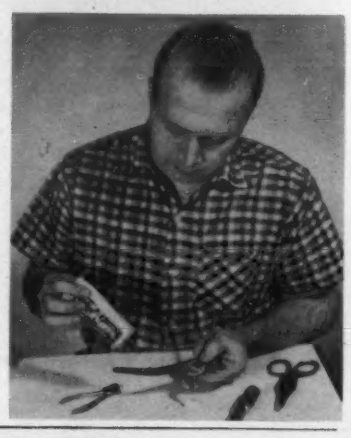
The styrene-rubber "alloy" is used to fabricate the humidifier wind tunnel which acts as a cover for the evaporating drum, fan, and motor. At the same time, the wind tunnel directs air into the drum. Campco S-300 has low moisture pickup, high impact strength, light weight, good dimensional stability, and ease and low cost of forming and fabricating, Swan claims.

Liquid Rubber Repairs Electrical Problems

Many electrical repair problems are claimed to be answered by "Duro Plastic Rubber," a new product developed by the Woodhill Chemical Co., Dept. AC&RN, 1391 E. 33rd St., Cleveland 14.

The new liquid rubber chemically vulcanizes without tools, heat, or flame and is effective for insulation, waterproofing, and rustproofing, it was stated.

Duro Plastic Rubber is designed to save time and money in making repairs. The non-inflammable product can be used for such jobs as insulation of wiring and tool handles, protection of bare ends of terminals, and mending rubber gloves.

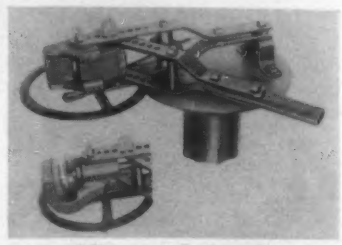


Liquid Neoprene Coating Inhibits Corrosion

A corrosion inhibiting, liquid neoprene protective coating with a "built-in" primer is a new product announced by the coatings division, Charleston Rubber Co., Dept. AC&RN, Charleston, S. C.

Adds Two Attachments for Universal Bender

Two new attachments to further the claimed versatility of the Hossfeld universal pipe, bar, and angle iron bender have been introduced by Hossfeld Mfg. Co., Dept. AC&RN, Winona, Minn.



The shear attachment is useful in shops that cut flats as well as rounds. Blades are adjustable and interchangeable, of high grade tool steel hardened for cutting hot rolled mild steel or its equivalent. Capacities are ⅜ by 2 in. flats and ½-in. round or square stock.

The punch attachment is useful as a utility punch for short run jobs. It is fitted with a standard Cleveland coupling nut (size #7, style 23) for standard punch dies.

Offers Explosion-Proof Temperature Control

An explosion-proof dual switch temperature control is now being manufactured by the United Electric Co., Dept. AC&RN, 79 School St., Watertown 72, Mass.

This control, type E98A, is a sensitive, remote bulb temperature control designed for use in hazardous locations where explosive vapors and gases are present. Two separate switches permit switch action above or below the set point, control of two independent circuits, and flexibility of switching arrangement, it was explained.

Temperature settings are made by rotating a single turn knob.

GLAD

TO HEAR THE EQUIPMENT YOU SPECIFY DELIVERS THE GOODS ON THE JOB? THEN READ THE RIGHT HAND PAGE...

Drive Studs Into Concrete with Velocity Tool

New model GH-1 velocity-power driver, for driving threaded or headed studs into concrete and steel with energy created by a discharge of blank cartridge, is now being marketed by Velocity Power Tool Co., Dept. AC&RN, 201 N. Braddock Ave., Pittsburgh 8.

Trigger activation, push-type replacement of barrel units, and a shape fitted to hand contour for easier handling are among the claimed design improvements of the new model "Green Hornet" driver. Retained are inherent features that offer safe and efficient operation.

Offers 'Deluxe' Freezer

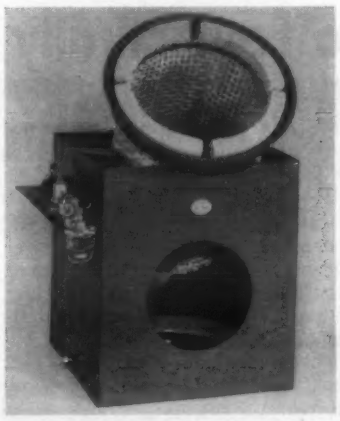
Improved freezing efficiency and a streamlined cabinet are among the highlights of a new "Deluxe" freezer produced for the home market by Nor-Lake, Inc., Dept. AC&RN, Hudson, Wis.

Food stored in the doors of the 16 and 20-cu. ft. models is subjected to claimed greater freezing efficiency.

Adds Ice Cream Cabinet

A new 30-gal. ice cream cabinet has been added to its line of ice cream cabinets designed for installation in customer view by Bastian-Blessing Co., Dept. AC&RN, 4203 W. Peterson Ave., Chicago 30.

It has a one-piece stainless steel top, stainless steel front facing, and back splash. Front edge is rounded.



Humidifier Controls Moisture Automatically

Moisture can be controlled automatically by a new humidifier which adds moisture to building air by means of a woven sponge yarn basket made by E. I. du Pont de Nemours & Co., Inc., Dept. AC&RN, Wilmington 98, Del.

Easily combined with present heating systems, the compact unit provides low-cost moisture control because of its simplified construction, du Pont says .

Warm air from the furnace is forced through a specially fabricated basket woven of du Pont cellulose sponge yarn, similar to that used in household mops. As it passes through the wet sponge basket, the air absorbs moisture, thus raising the relative humidity.

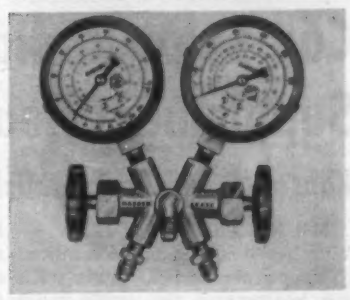
Develops New Finish

Newest thing in appliance finishes is "Vitrilan," a thermosetting acrylic finish produced by Interchemical Corp., Finishes Div., Dept. AC&RN, P. O. Box 659, Newark, N. J.

Based on a cross-linking acrylic polymer, Vitrilan brings a new set of standards in finish performance, Interchemical claims.

It has claimed exceptional resistance to soaps and detergents.

What's New



Double Gauge Charging, Testing Unit Added

A new double gauge charging and testing unit has been announced by Madden Brass Products Co., Dept. AC&RN, Aurora, Ill.

Designed for testing and purging both high and low sides, it is claimed to help servicemen find trouble quickly. It features Teflon valve seat and requires only light hand pressure for positive shut-off.

Can Use Solenoid Valve With All Common Media

A new two-way solenoid valve that combines large orifice capacity with high pressure differential has been announced by Skinner Electric Valve Div., Dept. AC&RN, 105 Edgewood Ave., New Britain, Conn.

The R series, pilot-operated piston valves use the V5 as an operator. These valves are designed for use with all common media such as air, water, oil, and semi-corrosive media. An explosion-proof design is also available. Available soon will be a high-pressure version with pressure ratings to 1,000 p.s.i. and higher.

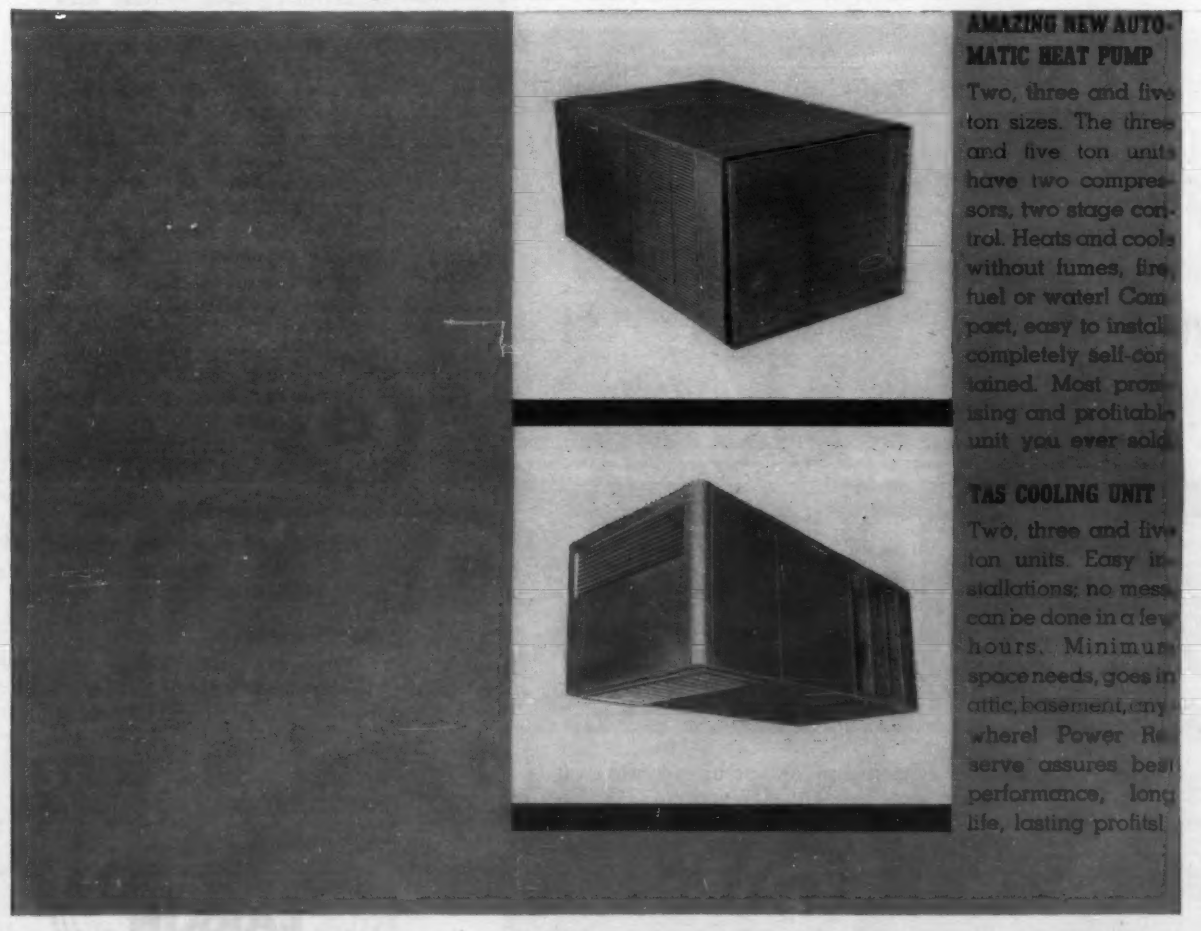
CORRECTION

Inadvertently, another firm's air-cooled condensing unit was shown in the March 31 issue as being Dover Mfg. Co.'s new "silLOWette" cooling tower. Here is the Dover tower.

Releases One-2 Stage High Vacuum Pumps

Release of two new single-stage mechanical high-vacuum pumps designated KDH-65 and KDH-80 has been announced by Kinney Mfg. Div., New York Air Brake Co., Dept. AC&RN, 3529 Washington St., Boston 30.

Engineering of these pumps provides an opportunity to bracket two capacities in a single model through the use of higher speed and increased horsepower.


AMAZING NEW AUTOMATIC HEAT PUMP
Two, three and five ton sizes. The three and five ton units have two compressors, two stage control. Heats and cools without fumes, fire, fuel or water! Compact, easy to install, completely self-contained. Most promising and profitable unit you ever sold.
TAS COOLING UNIT
Two, three and five ton units. Easy installations; no mess, can be done in a few hours. Minimum space needs, goes in attic, basement, anywhere! Power Reserve assures best performance, long life, lasting profits!

YOU KNOW YOU CAN COUNT ON TYPHOON!

Typhoon adds to your reputation by turning in the kind of performance your clients demand . . . and more! Each and every Typhoon unit is designed and built to stand up to extreme weather conditions and sudden severe temperature changes without strain or breakdown. Typhoon quality begins with Power Reserve—superior components and oversize parts to deliver beyond rated capacity. All copper condensers in water cooled units, largest coil surfaces, and rugged 11 and 14 gauge metal in durable lifetime cabinets. And Typhoon dependability is enhanced by the flexibility of large and small units that can be easily adapted, split or combined to fit any and all installations with maximum ease and economy. Air cooled units from 2 tons to 20 tons, both packaged and as split systems. Water cooled units from 3 tons to 60 tons. Packaged water chillers, 2 tons to 50 tons. Air cooled condensing units to 20 tons, water cooled to 60 tons. For quality, performance, versatility . . . next time select Typhoon, the industry's most complete line of packaged air conditioners.

TYPHOON
DIVISION OF HUPP CORPORATION

Typhoon Air Conditioning Company
505 Carroll Street, Brooklyn 15, New York

Please send me full product information on the Typhoon line.

Name_____

Address_____

City_____ Zone_____ State_____

8D-1

Can Solar Radiation Be Used To Economically Supplement Heat Pump In Ranch Style Home?

Kansas Group To Establish Laboratory In Home for Field Research

MANHATTAN, Kan. — Whether it would be economical to supplement a heat pump with air heated by the sun's rays will get a practical test in a farm home to be built west of Topeka this summer.

The Kansas Committee on Relation of Electricity to Agriculture has earmarked $2,500 of its $15,000 annual budget to expand present laboratory work to field scale installation, and to study results of tests in a ranch-type home to be built by Earl Palmberg.

KCREA is an organization through which power suppliers of Kansas, since 1924, have made funds available to the Kansas State college department of agricultural engineering for research on farm uses for electricity.

"Heat pumps are becoming more popular, and an estimated 300 are in use in Kansas," the announcement by Kansas State college pointed out. "Many of these were installed in the past two years. But there have been two big difficulties:

"1. It is on the coldest days, when heat is needed worst, that air contains the least heat.

"2. During highly humid periods the heat extraction portion of a heat pump tends to frost up.

"In regard to these difficulties, Kansas is fortunate in that the cold snaps usually are accompanied by clear days when the sun shines brightly. If this solar radiation can be collected efficiently, the heat pump might become far more practical for heating homes during the winter.

"Experiments at Kansas State college this past year indicate that a solar collector, such as is proposed for the Palmberg home, should result in about a 20% decrease in energy demands. It has been estimated that the additional cost of a collector and storage for the sun's heat could be amortized from savings over a 4-5 year period, if the collector has been integrated into architectural plans."

Palmberg plans to install two heat pumps, one to air condition and heat the bedroom zone of his house—the other to serve the remainder of the home. One of these pumps will be supplemented with heated air from the solar collector—the other will not. This will make it possible to compare the efficiency of the two systems.

The collector to be used will be corrugated sheet metal, painted black, with two faced sheets of transparent plastic as a cover, according to C. Paul Davis, USDA agricultural engineer, who is one of the leaders on the project.

The plastic allows short wave solar radiation to pass through to the metal absorber, but "traps" or "blocks" resulting long wave heat re-radiation from the absorber. Air passing over the plate picks up the heat and goes either to the heat pump or to be stored in a pit filled with crushed rock.

Palmberg's collector will be built as a yard screen or fence, but for additional economy of construction might be incorporated as a south facing wall of the home.

"This type of collector is relatively low in cost and is a modification of typical construction practices and materials found on many farms," Davis commented. He added that some work has been begun recently by KCREA on use of solar collectors for drying grain. Similar applications are possible for drying hay and for ventilating animal structures.

The crushed rock storage being designed will be adequate to supplement the air source being used to heat a home over a three-day period, Davis said. This should be sufficient, except for a very few periods of cloudy, or extremely cold, weather each year, he added. During those periods supplemental electrical resistance heating elements normally included with the heat pump may be utilized.

Others from the K-State staff who will be working with Davis on this project are Ralph I. Lipper and Gerald Zachariah, both of the agricultural engineering department.

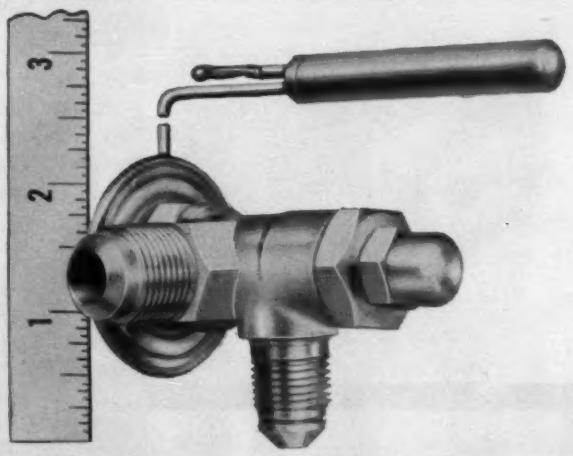
Davis emphasizes that the Palmberg project is an experimental installation which still is in the planning and research stage. Therefore, this type of supplementation of air for heat pumps is not being recommended to other prospective home builders at this time.

Goodwin Heads Waco Assn.

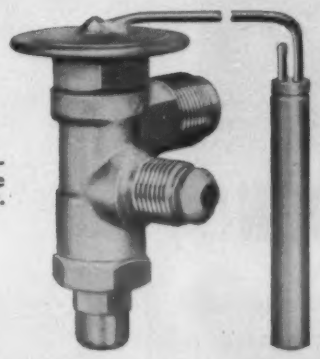
WACO, Texas—Lewis Goodwin of Dixie Plumbing Co. has been elected president of the Waco Air Conditioning Council, Inc.

Other new officers are first vice president, John Jacobs of Jacobs-Cathey Air Conditioning Co.; second vice president, Cooper Lockridge of Kay Co.; secretary - treasurer, William Metcalf of Texas Distributors, Inc.

Inch for Inch
DETROIT'S
NEW expansion valves
give you the most...



COMPACT CAPACITY



The new No. 718 Expansion Valve. Also available with external equalizer.

An entirely different concept in expansion valves—the completely new No. 717 and No. 718. Each of these valves is designed with a minimum of moving parts, to provide a more compact unit with greater capacity.

These new valves offer:

- **The Smallest Valves Per Ton Of Refrigeration**
  Broader use in more limited spaces.
- **Close Superheat Control**
  Minimizes surge for maximum valve operating efficiency.
- **Broad Range Of Application**
  ½ to 3 tons R-12
  ½ to 5 tons R-22
  L, C and Z charges available.
- **Easier To Service**
  Entire valve easily disassembled for inspection and cleaning.
- **Connection Sizes**
  ¼ and ⅜ S.A.E. Inlet with strainer.
  ½ S.A.E. Outlet.

The No. 717 is a factory set valve of the same basic design as the No. 718 Expansion Valve. The No. 717 superheat setting is easily adjusted in the field before installation, with an Allen wrench through the inlet connection, to allow superheat settings other than standard. The adjusting screw is not sealed or soldered.

For complete information see your DETROIT Wholesaler.

Detroit Controls Division of American-Standard, 5900 Trumbull Avenue, Detroit 8, Michigan.

Canadian Representatives: R. & E. REFRIGERATION & HEATING SPECIALTIES LTD., Montreal, Toronto, Winnipeg

AMERICAN-Standard
DETROIT CONTROLS DIVISION

LARKIN
MEANS DURABILITY

THE ORIGINAL, PATENTED
CROSS-FIN COIL

The refrigeration coil that changed an industry stands today unchallenged for performance, user satisfaction and lasting durability. Made from the finest materials by skilled craftsmen under exacting standards, every Larkin Coil features imbedded fin-to-tube contact, swaged connection, silfos welded construction, and staggered tubing. Write for complete details.

Manufacturers of the original Cross-Fin Coil • Humi-Temp Units • Frost-O-Trol Hot Gas Defroster • Air Cooled and Evaporative Condensers • Cooling Towers • Air Conditioning Units and Coils • Direct Expansion Water Coolers • Heat Exchangers

LARKIN COILS
519 MEMORIAL DR. S.E. • ATLANTA, GA.

In 'Privazone' Model Home

Zoned Hydronic Heating Controlled by Separate Thermostat And Circulator; Is Tied In with Central Air Conditioning

MIAMI, Fla.—Along with its concept of separate "zones" for living, sleeping, and bathing-dressing, the newly-introduced "Privazone" house offers an "advanced idea" in home heating—zoned hydronic heating—to satisfy the family's varying health and comfort needs in different areas of the home, according to the Better Heating-Cooling Council.

The privazone concept was introduced to the public when the first model home with this new design was opened here.

In the privazone design, the bedrooms become simply sleeping and sitting areas, and the bathroom is expanded into a combination bathing - dressing area having separate "dressatories" (lavatory, toilet, and clothes storage) for husband and wife with a connecting bath between, the council pointed out.

This design was derived in part from the findings of the Women's Housing Congress in Washington, D. C., at which 100 housewives representing all sections of the country gathered to express their opinions about the basics, such as plumbing and heating, in their homes, according to the BHC.

BASED ON IDEAS FROM WOMEN'S HOUSING GROUP

The zoned hydronic heating system (and cooling equipment) used in the Miami model house is not only compatible with the privazone concept, but it, too, is said to be based on the findings of the Women's Housing Congress.

Three hydronic heating zones, each controlled by a separate thermostat and circulator, are used in the privazone house. One zone is for the bedrooms, a second for the dressatories, and a third zone for the living room, kitchen, Florida room, and powder room.

A single heating plant — a compact hot water heating boiler tucked away in the garage — adequately serves all three "custom" controlled zones, it is claimed.

With this hydronic heating system, part of the family can entertain in comfort in the living room while the children sleep in the bedrooms with the heat "turned down."

SLEEP AT 68°, BATHE AT 74°

Moreover, zoned hydronic heating is a complement to the privazone concept since most families seem to prefer to sleep with temperatures set at about 68°, while bathing and dressing are accomplished more comfortably in a room at about 74°, it was stated.

Depending upon the particular likes of individual families, zoned hydronic heating in the privazone house has been explained to work something like this:

"The children go to bed at 9 p.m. and sleep comfortably through the night with bedroom temperatures set at a constant 68°. At the same time, parents entertain friends in the living room where the temperature remains at 72° as long as they want. The parents' bedroom, of course, is set at 68° when they go to sleep.

"Upon rising, the man of the house enters the 'dressatory' which is a comfortable 73°, and remains there until he has finished bathing, shaving, and dressing — ready to breakfast and leave the house. The family simply selects the temperatures that suit them best."

USES BASEBOARD HEATING PANELS

The privazone house uses baseboard heating panels. These provide quiet, draft-free, clean heating that housewives at the Women's Housing Congress deemed so desirable, it was said.

Central air conditioning — a compatible system—is installed in the attic space of the privazone house. The air conditioning unit distributes cool, clean, dehumidified air through overhead room outlets in each room of the house. The overhead outlets emit a natural flow of air that blankets the entire room.

SEND FOR REPRINTS

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.
Only 40¢ each.
For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Emphasize Local Plans In Home Improvement 'Performance' Contest

CHICAGO—Contest plans of the Home Improvement Council were given distinctly greater local emphasis by HIC's board of directors at a recent meeting here.

The directors voted to extend the period of the "performance" contest that will follow the current "How's Your Home?" quiz to one full year—and increase the traffic-building local tie-in possibilities of the second contest by encouraging chapters of HIC to make it a local contest first, it was further indicated.

The contest schedule approved by the HIC board calls for the following three programs:

1. No change in the "How's Your Home?" phase that started on Jan. 1 this year and has been scheduled to finish on June 30.

2. Local "performance" contests sponsored by local chapters from July 1 to Dec. 30 this year—in which the homeowner reports on an actual completed home improvement project.

3. National "performance" contest in the first six months of 1959. In this phase, all entries in local contests will be forwarded automatically into the national contest—and national entries will be accepted directly from homeowners in areas where there are no local chapters, the group's board emphasized.

For All-Around Comfort... All Around the Year

Every day's a perfect day, when your Warren Webster Man plans the weather. In the chill of winter, decade-proved Webster Baseboard Heating uses the modern science of Hydronics to wrap your house in a blanket of gentle, clean, draft-free warmth. It's hot water heating at the peak of comfort, to complement the finest home.

And, in the heat of summer, the Webster Cool-Air System takes over. An independent but compatible central cooling system, it brings delightful whole-house air conditioning within the reach of any home owner. Uses its own inexpensive ducts, outlets and controls . . . or teams with existing ductwork. Easily installed in attic, basement, crawl space, or equipment room.

For 52 weeks of springtime, get the facts from your Warren Webster Man. Or send for Bulletins AR-669 (Baseboard) and F-141 (Cool-Air). Warren Webster & Company, Camden 5, New Jersey. Since 1888. Offices in principal U.S. cities and Canada.

WEBSTER'S FINEST PRODUCT

the Warren Webster Man

WARREN WEBSTER
HEATING . . . COOLING

Ice Cream Manufacturers Reply

Furnishing Cabinets Enables Suppliers To Make Sure Each Dealer Has Appropriate Number, Size, Cut Cost

This is the concluding part of an article offering ice cream manufacturers' reply to Federal Trade Commission charges as to "why furnishing refrigerated cabinets to their accounts is economically necessary" and why they believe it would do them "irreparable injury" and be "against the public interest" to prevent them from doing so. First part appeared in the April 7 issue. FTC charges against the nine big ice cream manufacturers were covered in the March 24 and 31 issues of the NEWS.

"Exceptions to the general rule that ice cream dealers do not desire to own and service cabinets are the large modern supermarkets which in many cases furnish and service their own cabinets.

'Supermarkets Can Properly Maintain Units'

"Larger supermarkets today usually have large frozen food departments with 50 to 75 ft. of frozen food cabinets. Ice cream plays a relatively small part in these departments and the dealer selects ice cream cabinets which will conform with the design of the frozen food section as a whole.

"Furthermore, owners of large supermarkets are in a position to see that cabinets are properly maintained and to select the right size and style of equipment, particularly the modern up-to-date style of cabinet which stimulates impulse buying.

"c. The practice of furnishing cabinets enables suppliers to make sure that each dealer has the appropriate size and number of cabinets.

"Delivery costs are a significant and increasing portion of the total expense incurred in the distribution of ice cream. They are roughly twice as large as the costs of furnishing and servicing cabinets.

'Cabinets Related to Supplier's Deliveries'

"Delivery costs can be minimized if the cabinet space at each customer's place of business is related to the supplier's delivery schedules.

"If the cabinet is too small, the supplier must make frequent deliveries in small quantities. If the cabinet is too large, his cabinet costs are larger than necessary.

"It is important, therefore, that the ice cream manufacturer be able to select the size and number of cabinets in light of his delivery schedules, which, of course, vary from area to area and vary within areas depending on a variety of circumstances.

"If the dealer selects the size of the cabinet, the result is that delivery schedules cannot be planned and arranged in an economical fashion. In some cases, moreover, it may be necessary to furnish storage cabinets in order to hold down delivery expenses.

'Should Be Able To 'Display Full Line'

"Cabinets should also be of sufficient size for handling and displaying the supplier's full line of flavors and packages so that the potential ice cream sales of his customers will be fully realized. When dealers select their own cabinets, they may also neglect this consideration. . . .

"Respondents' policies are to furnish the size of cabinet which is most suitable for the account in the light of delivery costs and sales potential.

"d. By furnishing cabinets, suppliers are able to make sure that the proper type and style of cabinet is used by the dealer.

". . . New (open-top, glass front) display cabinets are a significant development in the ice cream industry for this key reason: a very substantial part of total ice cream sales is attributable to impulse buying; i.e., the purchasing of a product, with no previous intention of doing so, after seeing it on display.

'New Display Cabinets Up Sales 30-300%'

"One witness estimated that 40 to 50% of all self-service sales are the result of impulse buying. Another estimated 80%. . . . One witness testified that the new display cabinets increased sales as much as 30 to 300%.

"The conventional cabinet, on the other hand, is best suited for the dispensing and storage of ice cream. In a supermarket, for example, it sells relatively little ice cream.

"The new display cabinets are furnished by respondents, but not indiscriminately. Only a relatively small percentage of all of respondents' cabinets are display cabinets.

"They are generally placed only in accounts with a substantial amount of traffic, and where it is felt that sales will be stimulated and increased. Most of these cabinets are placed in existing accounts, rather than in switch accounts.

"The ice cream manufacturer is in a better position than the dealer to choose the appropriate type or style of cabinet.

"The dealer is naturally reluctant to keep up-to-date in cabinets, even though his store justifies a new cabinet, since he has an investment in his old cabinet and has little or no market for it.

'Mfr. Can Down-Grade Ice Cream Cabinet'

"However, the ice cream manufacturer is in an entirely different position, since he is able to 'down-grade' a cabinet, whenever it becomes necessary or desirable, and by moving it from one type of account and even to dispose of older cabinets by changing their use from display or dispensing to storage purposes, thereby obtaining its maximum useful life.

"The objective in selecting the various styles of cabinets to be furnished to ice cream dealers is to maintain and increase sales to the greatest extent possible. When the manufactur-

(Continued on next page)

However your order arrives — by phone, mail or telegram — your shipment starts immediately. It's here today . . . *gone today!*

And check this new United Service Tube carton.

Punch-out handles (a) for easy carrying. Punch-out holes (b) makes it simple to remove from box or shelf.

Call, write or wire United for copper, brass and aluminum tube and wire.

**Water, Refrigeration and Automotive*

UNITED WIRE

PROVIDENCE 7, RHODE ISLAND

FOR A PERMANENTLY UNITED JOINT, INSIST ON PHOSON

'Unfair for Mfr. Who Doesn't Furnish Cabinet To Use Another's Equipment'

(Continued from preceding page)

er selects and furnishes the cabinets rather than the dealer, this objective has the best chance of being fulfilled."

Economically, the brief asserted, there is no difference between supplying cabinets on a loan or on a rental basis. Ice cream companies, it continued, from the beginning furnished cabinets to dealers without charging a rental.

"It is clear, however," it said, "that cabinets are not in fact furnished free to the dealers. Where rentals are not directly charged by respondents, the cost of the cabinet is included in the price of the ice cream. . . .

"Ice cream rentals have never been popular among ice cream suppliers or dealers and have been difficult to collect.

"Where cabinet rentals are charged, the ice cream dealer who selects the cabinet tends to disregard the merchandising and delivery factors which equally affect all ice cream manufacturers.

"The collection of cabinet rentals also increases the cost of doing business because it is necessary to keep separate records on rental charges and rental payments. Moreover, recent experience with cabinet rentals have been unsatifactory. . . .

'Dealers Pay Cost Pass on to Consumer'

"In any event, ice cream dealers always pay for the cost of the cabinet and its servicing and pass this cost on to the consumer, whether rentals are separately collected or not."

Contending that it is reasonable for a supplier to require dealers to whom cabinets have been furnished to use those cabinets only for the displaying and selling of the supplier's ice cream, the brief pointed out that a number of states require it by law.

Delivery scheduling, full line display, and consumer confusion were cited as reasons. But, said the brief, most important is fairness.

'Supplier Recovers Cost Only In Sale Of Ice Cream'

"The ice cream supplier who incurs the expenses of providing and servicing the cabinet customarily recovers these costs only in the price of his ice cream.

"It is manifestly unfair for a manufacturer who had not incurred these expenses to use equipment furnished by another without compensating him.

"Moreover, the other manufacturer is not precluded from access to the outlet. He may sell through his own cabinet, or one owned by the dealer."

The brief said respondents do not furnish cabinets on the condition that accounts handle only the products of the respondent furnishing the cabinets or as an inducement to hold or obtain ice cream accounts.

The brief admitted that in some parts of the country, printed forms used as evidence of cabinet ownership in controversies with landlords and in dealer bankruptcies may contain a requirement clause. These are not considered binding as exclusive dealing contracts either by respondents or ice cream dealers, it declared.

"Respondents never attempt to enforce them except in cabinet ownership disputes," it said.

It continued, "Respondents sell their ice cream on the basis of quality and consumer acceptance. Cabinets are not furnished by respondents, or others, as an inducement to obtain or hold accounts.

"Dealers may obtain cabinets of the same type on the same terms from practically every ice cream manufacturer and this has been so since the beginning of the industry.

"Since cabinets are available from all ice cream manufacturers they cannot and do not serve as an inducement."

The brief cited a dealer survey conducted by National Analysts which indicated that cabinet reasons were a factor in determining whose ice cream the dealer handled in only about 2% of the cases.

The brief contended that respondents obtain cabinets from regularly established cabinet distributors in small quantities and generally at the local level at the same prices and on the same terms as everyone else. Thus, respondents do not obtain any advantage over non-respondents (other ice cream manufacturers) in the purchase of cabinets.

'Dealers Can Freely Change Suppliers'

Furnishing of cabinets does not prevent ice cream accounts from freely changing suppliers at any time, it adds. "Once a dealer decides to change brands, the new supplier installs a cabinet and, in most areas of the country in accordance with customer, returns the cabinet of the old supplier directly to the latter.

"This switching of accounts takes place even though the dealer has signed a cabinet receipt which contains a term requirements provision.

"The policies of each of these respondents uniformly proscribe both furnishing cabinets for frozen foods and permitting retailers to put frozen foods into the ice cream cabinets they furnish.

"Ice cream is a delicate product and even when packaged will pick up odors from any food stored with it.

"Therefore, the respondents, all of whom base their selling programs primarily on their reputation for quality, do not want to have other frozen products placed in their ice cream cabinets.

"For this reason each of the respondents, in the occasional instances when a dealer is found using one of its cabinets for frozen foods, insists that such use be stopped.

"Should a dealer refuse to comply, the respondent will remove his cabinet.

"In the few isolated incidents in which the record shows that a respondent furnished or sold cabinets for frozen foods, it

(Concluded on next page)

MINERALLAC PERFORATED STRAP
Versatile Hanger Iron

Safely supports hanging pipes, conduits and cables up to 500 lbs. ¾ in. 20 gauge electro-galvanized steel. ¼ in. holes on ½ in. centers. Various lengths available. *Send for literature.*

MINERALLAC ELECTRIC COMPANY
25 N. PEORIA ST. • CHICAGO 7, ILL.

VSF

Superior VALVE & FITTINGS CO.

1808 WEST LIBERTY AVENUE • PITTSBURGH 26, PA.

Greetings:

Will you join us in marking our 20th anniversary?

This may seem like a short span in the life of a business, but when the 20 years are progressive years, we think they are worth talking about.

And how do you mark progress? We at Superior are dedicated to a set of principles that has helped us achieve a distinctive place in our industry -- a set of principles that has marked us for even greater progress.

Here are our six guiding principles:

Product	- new designs, new ideas
Policy	- progressive, reliable
Pride	- in quality, workmanship
People	- honor, fairness
Promptness	- trust, dependability
Price	- mutually profitable

This is the whole spirit of Superior -- it is our reason for being in business. From this progressive policy has come 20 years of success; we hope you will share our success in the years to come.

Our sincere thanks to the friends who have helped us gain this achievement.

Sincerely yours,

W. A. Siegfried
President

1938 20 1958 years progress

Competitors Would Continue!

Respondents See Injustice In Forcing Them To Stop Furnishing Cabinets

(Concluded from preceding page) shows also that it was done only to meet a competitive offer.

'No Significant Effect On Dealer Selection'

"The National Analysts Survey shows that the furnishing of frozen foods cabinets either by respondents or non-respondents, has no significant influence on dealer's selections of ice cream suppliers."

But, the brief says in the next breath:

"An order prohibiting respondents from furnishing cabinets would result in the loss of a very substantial part of respondents' business and would cause them irreparable injury," the brief asserted.

". . . An order prohibiting respondents from furnishing cabinets, while all other (local and regional) ice cream manufacturers were free to do so, would immediately and for the first time make the furnishing of cabinets a competitive weapon.

"Non-respondents would continue offering a necessary service to ice cream dealers while respondents would not be permitted to do likewise. . . .

"It is unlikely indeed that other ice cream manufacturers would cease furnishing cabinets in the event respondents were prohibited from doing so.

"The furnishing of cabinets has been too intimately connected with the manufacture, delivery, and sale of ice cream and the advantages to buyer and seller are too great for ice cream manufacturers voluntarily to cease furnishing cabinets to ice cream dealers.

"The great majority of non-respondent manufacturers believe that it is desirable to furnish cabinets. Ice cream dealers, particularly the small and medium dealers, prefer that manufacturers supply cabinets and expect them to do so."

Amusement Park Gets Refrigerated Fountains

PITTSBURGH — Kennywood Park last year found a unit of two mechanically-refrigerated drinking fountains so popular that this year the amusement park has installed an additional unit of eight fountains, reports Carl Hughes, park assistant general manager.

Congress Studies Uniform Milk Laws To End Interstate Trade Barriers, Reduce Equipment and Inspection Costs

WASHINGTON, D. C. — Use of milk sanitation laws as trade barriers against the free flow of milk in interstate trade comes under Congressional scrutiny here April 17-18.

Cong. Oren Harris, chairman of the House Interstate and Foreign Commerce Committee, has scheduled hearings by the group's Health and Science Subcommittee on HR-7794 introduced by Cong. Lester Johnson, Wisconsin, and a companion bill, HR-9286, introduced by Cong. Fred Marshall, Minnesota. The bill has been introduced in the Senate by Sen. Hubert Humphrey, Minnesota, and Sen. William Proxmire, Wisconsin.

The proposals would establish the U. S. Milk Ordinance and Code as the only standard for all fluid milk in interstate trade. This code, designed as a model for the industry by the U. S. Health Service, is now followed in 14 states, Hawaii, Alaska, 477 counties, and 1,397 municipalities. It is the basis for regulation in 22 other states.

"Even so, hundreds of municipalities, counties, and some states operate under a crazy-quilt variety of different milk sanitation codes, largely because milk inspection started as a local regulation and was generally expanded to incorporate larger areas," said a statement issued by Cong. Johnson.

"The proposed bill recognizes the importance of local regulation by accepting inspection by local officials already inspecting milk. The function of the Health Service would be to certify those inspections according to its own high quality standard. It further provides that milk could be sold wherever it meets that standard."

Attacks Use of Health Standards for Restraining Trade

Cong. Johnson attacked the use of health standards as trade barriers as unethical.

"If this were merely a question of agreeing on the best health standard for milk I feel that officials would soon reach agreement on a single standard," he said. "It is obvious that in some communities unusual health standards are enforced as a means of keeping out milk from other areas in order to protect a local monopoly for producers.

"One of the most flagrant examples of this monopoly domination of a market through sanitation regulations is right here in Washington, D. C. It is a real travesty of the principle of free trade that quality milk from other parts of the nation cannot be sold here because it is not produced under the special set of standards employed in the District of Columbia to protect the market for Maryland and Virginia milk producers and no others."

10 Inspectors In 1 Wisconsin Milk Plant

Cong. Johnson pointed out that in 1956 a single milk plant at Cameron, Wis. "had 10 different inspectors trooping through the plant representing three states and seven cities. The plant had to meet standards of each inspector to sell in the market he represents. Costs of this duplication in inspection in this and other plants are passed on to the consumer or deducted from the payment to the farmer."

Dairy equipment manufacturers have expressed interest, he said, because at the present "they must tool equipment and machinery to different specifications to fit the hodge-podge variety of sanitation standards in the country."

Exclusive YORK FLEX-O-METIC CONDENSING UNITS

COME IN 2 SECTIONS

Condenser Section Easily Separates From or Connects To Hermetic Compressor Section

SEPARATE SECTIONS SPELL OUT ALL THESE MONEY-SAVING BENEFITS FOR INSTALLING CONTRACTORS:

More flexibility! Compressor and condenser sections for varying models can be interchanged. So, your York Wholesaler will have the unit you need instantly available!

"Remote" installations now practical! Condenser section may be installed remotely from compressor section. Sections separate and/or connect easily...in minutes!

Installations are simpler! Compressor section is completely factory wired. Multiple compressor sections can be installed on racks with a single dry surface condenser circuited for each application to meet special needs. Rotalock Valve rotates 360° for easy piping...3 service valves, 2 with gauge ports, let you take high pressure readings at both compressor and receiver...low pressure reading at compressor.

Tri-Cooling—A York Exclusive available on all Very Low Temperature air-cooled or water-cooled units for applications as low as—50° F.

Complete line of York Flex-O-Metic Condensing Units in air-cooled, water-cooled and air-water-cooled models with sizes ranging from ⅓ to 7½ HP. Contact your York Wholesaler for full particulars, or, write York Corp., Box 1272, York, Pa.

Your FUTURE and FORTUNE Now Lies With York!

YORK

York Corporation, York, Pa.
Subsidiary of Borg-Warner Corporation

TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

High Temperatures (2)

Because compressors and condensing units must be produced for average or nominal conditions yet must be installed in necessarily unique applications (each one at least slightly different from the next) makes it difficult to place responsibility for specific cases of excessive discharge temperatures.

In suction-cooled motor-compressors, for example, it has been said that the individual molecules of suction gas must do a "cha-cha" to get in, around the windings, and back out. In principle, the cooler the suction gas the better, for every degree of superheat added to suction gas adds about a degree to the discharge temperature.

Also, however, it is sometimes good practice to subcool the liquid line through the use of a heat exchanger or by soldering the liquid and suction lines together for several feet. This practice, of course, while aiding the expansion valve by eliminating possible flash gas adds superheat to the suction gas in the system.

Who determines whether discharge temperatures are such that the use of a heat exchanger may do more harm than good—the manufacturer, the application engineer, or the serviceman?

Obviously much can be overcome or compensated for in the field by the serviceman. The simple expedient of installing exhaust fans in the balcony machine rooms of several identical supermarkets lowered the summer ambient enough to eliminate repeated failures of motor controls because of overheated heater elements. In this particular case, it was the serviceman and not the factory engineer who recognized the high temperature problem.

EXAMPLES OF HIGH TEMPERATURE

In another case a 25-hp. ammonia compressor was normally operating with a 350° discharge temperature—"just by the nature of the beast" according to the operating engineer. Although the compression ratio for such compressor is usually limited to 10, this unit operated at 15 to 1 for several years.

When opened, the valves were found to have no temper, but they hadn't broken. Practically speaking, this engineer was justified in operating beyond the somewhat arbitrary compression ratio set by manufacturers, although this is certainly not to give the impression that manufacturers' recommendations are to be blithely ignored.

A manufacturer points with a shudder to several Refrigerant-12 and 22 installations—from 1½ to 7½ hp.—which are operating, air cooled, at compression ratios of 15 to 1 in summer. Discharge temperatures as high as 600° have been measured, according to this manufacturer.

TIME ELEMENT IMPORTANT

Time is an important consideration when considering high temperatures. A practical example of this is the electric motor manufacturer who has successfully installed a 1-hp. motor to do a 4-hp. lifting job. The key point is that the load is only applied for 15 seconds with long idle periods between.

The 600° temperature noted in the previous example could undoubtedly not be a continuous temperature. How long those units will last depends on for how long at one time the excessive temperature is maintained, and the frequency of occurrence.

The time factor is important inside a compressor. It is generally agreed that the gas temperature at the actual discharge valve can be a couple hundred degrees higher than that at the discharge port of the compressor. However, since the gas is moving so rapidly, the feeling is that the gas is only at this higher temperature for a moment, that moment just at the instant of discharge.

Clearly, then, excessive operating temperatures are a major problem in the industry — a problem variously blamed on the refrigerant, the oil, the manufacturer, and the installer or serviceman.

While it would be convenient to have a fixed temperature limit beyond which no system should go, in practice the current recommendations are often exceeded with no apparent ill effect. (One Refrigerant-12 condensing unit designed for desert use is designed to operate with a 275-p.s.i.g. discharge pressure. It remains to be seen for how long!)

WHOSE RESPONSIBILITY ARE OPERATING TEMPERATURES?

As to responsibility: obviously the application engineer cannot be responsible for the temperature difference between the discharge valve and discharge port, or for the path through which the cool gas travels to cool the motor, or for the most efficient and economical compression ratio. These are all matters of design and are the responsibility of the manufacturer.

It would be well if the manufacturers could conduct their own research and publish operating temperature limits of their own based on tests with their own compressors, rather than on laboratory tests conducted by oil or refrigerant producers.

The condensing unit manufacturers would do well to realize that their operations and application recommendations can significantly affect the original operating temperature of compressors as manufactured.

The application engineer and serviceman has it has their responsibility to design and maintain installed systems in such a way as to take advantage of the manufacturers recommendations but to realize that they can abuse the equipment by using it to the ultimate limit of its design.

All concerned should remember that general rules and general temperature limits are to be used as guides, not as firm restrictions from which no deviation is allowed. Much as an immediate comprehensive solution to the general problem is desired, there is none.

It will be the total experience of individual designs, installations, and servicing which will determine in years to come whether absolutely fixed limits will ever be feasible.

NEW FLEETSIDE BY CHEVROLET

Here's the new sweetheart of the Task-Force fleet, Chevrolet's new Fleetside pickup! No truck has ever been better to look at . . . or better for your business.

Long, sweeping lines, graceful body contours . . . *new* truck appearance that's fleet, dashing and completely modern! Yet there's even more to the new Chevrolet Fleetside than the striking beauty that first meets your eye. There's *size*, for instance: extra room inside to pack many additional cubic feet of payload. And with double-walled lower side panels, durable hardwood floor, and solidly constructed full-width tailgate, the new Fleetside is the toughest of pickup bodies, too! A new adjustable latch keeps graintight tailgate free from rattles.

Here's a new high in hard-working utility, matched by new styling that makes you stand out on any street. See the new Fleetside at your Chevrolet dealer's now! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

More load space than any other comparable low-priced pickup. In lengths of either 78 inches or 98* inches and a full six feet in width, this new body actually provides 50% more cubic capacity than the conventional pickup box! **Optional at extra cost.*

Plenty of work-whipping hustle and muscle. Your choice of two great engines—standard 145-h.p. Thriftmaster 6 or optional at extra cost 160-h.p. Trademaster V8. And truck-engineered chassis components will take all the abuse your most bruising hauls can give them!

CHEVROLET TASK·FORCE TRUCKS

Shallcross To Move To Air Conditioned Plant In Selma, N. C.

COLLINGDALE, Pa.—Shallcross Mfg. Co. announced it is moving its entire operation to a new 41,000-sq. ft. plant, nearing completion in Selma, N. C., which will be air conditioned throughout.

The one-story plant will house expanded office, engineering, and manufacturing facilities. Separate departments will be maintained for the production of Shallcross precision resistors, rotary switches, instruments, and attenuators.

SEND FOR REPRINTS
Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.
Only 40¢ each.
For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Chicago's 'Engineering Challenge'

Honeycombed Steel Decks Carry Air from 5 Medium Velocity Systems to Perimeter Sound Boxes, Air Condition Big Building

CHICAGO—A real challenge to the engineering "know-how" of the air conditioning industry has been met successfully with the complete year-round system for the new Inland Steel Co. 19-story office building in Chicago's Loop.

And part of the air conditioning problem was solved by a new item which Inland Steel itself supplied, and which may become a factor in future air conditioning installations.

A total of 3.8 million gross cu. ft. of completely unobstructed office space is offered with a unique air conditioning system that utilizes cellular "honeycomb-like" steel decks for air distribution.

This cellular steel structure is the Milcor Celluflor, product by Inland Steel Products Co. It is a steel sub-flooring of hollow cellular panels 24 in. wide having longitudinal raceways.

Cooling Ducts Rise In Central Shaft

All building utilities are contained in a 332-ft. service shaft which is external from the main office areas. This shaft carries the building power, air conditioning ducts, elevators, chilled water and condenser risers, piping, and stairs. Structural design of the building is such that all bearing columns are also external to the office.

The principal air conditioning equipment, manufactured by The Trane Co., includes two large capacity refrigeration units and a large number of air handling units, unit heaters, and cooling and heating coils.

Needed To Overcome Great Heat Gain

Major air conditioning problems centered around space economies, maintaining floor-to-floor heights, compensating for large areas of glass (68% of the building exterior is glass, 32% stainless steel) and solar heat gain from the building's four orientations, providing for dissipation of heat from high interior light levels and room occupants, and keeping the perimeter spandrel height at an absolute minimum.

To do the air conditioning job, five dual-duct medium velocity air systems were installed, permitting a minimum area in the core and maximum over-all economy.

Provides Flexibility

The system provides maximum flexibility of temperature control within each space or possible future space division; the lowest configuration at the building perimeter; and takes advantage of the diversity of load between the four orientations and the interior zone from the point of view of refrigeration load reduction.

The system operates by moving the air to perimeter and interior area sound attenuating chambers located above the suspended ceiling on each floor. This air is discharged from the perimeter zone sound boxes to the underside of the cellular steel decks which carry it to the building perimeter. Here it is released upward in front of the glass through a series of grilles space 5 ft. 2 in. on center around the entire building perimeter. This is the building module.

Air Returned via Ceiling Holes

Interior sound boxes supply the conditioned air through overhead ceiling ducts and diffusers. The duct layout is arranged so that both the interior and perimeter attenuating boxes are fed from the same set of hot and cold ducts on each floor. The air is returned for reconditioning through ceiling perforations and a duct system.

Controls are arranged to permit either individual thermostatic control of each sound box or group control of several sound boxes from a single room thermostat or return air thermostat. Space control of temperature is achieved at each sound box by mixing varying volumes of hot and cold air under control of these thermostats.

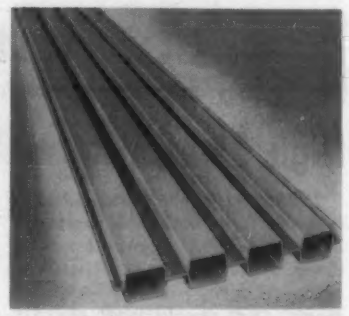
Temperature in the hot duct is reset from ranges of 110° to 78° from outside temperature. The temperature in the cold duct is maintained at 55° the year around.

Two 475-Ton Systems Provide Chilled Water

Cooling is provided by means of chilled water, the water chilling being done by the two Trane hermetic centrifugal units located in the sub-basement, each having a 24-hour capacity of 475 tons of refrigeration.

This chilled water is supplied to cooling coils located in the main system apparatus housing at a temperature of 42°. The

(Concluded on next page)



THIS cellular steel structure, "Milcor Celluflor," carries conditioned air in new 19-story Inland Steel Co. Bldg. in Chicago.

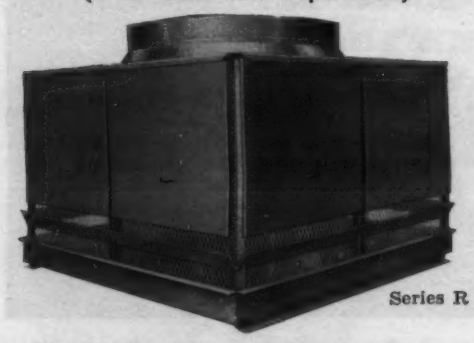
THIS shows how attenuator boxes are attached to honeycomb floor to distribute conditioned air.

A VIEW from outside the new Inland Steel Bldg., showing service shaft.

Introducing the **DOVER**

silLOWette

COOLING TOWER
(5 to 150 ton capacities)



Series R

The Boldest Advance in Cooling Tower Design In Years!

BOLD New Appearance!

LOW SILHOUETTE . . . The Dover silLOWette is designed to hug the roof line in any installation . . . the type of design architects are demanding.

COLOR . . . That's right . . . color! For the first time, real BEAUTY in a cooling tower with white transite or colored plastic side panels. Available in a wide range of colors.

LIGHTING . . . Translucent panels permit interior lighting of silLOWette tower for attractive display purposes.

GALVANIZED STEEL . . . All steel parts of the silLOWette tower are hot dip galvanized *after* fabrication to prevent rust and corrosion. Assures attractive appearance plus years of service.

Bold NEW Features!

REMOVABLE SIDE PANELS . . . Just flip side panels up-and-out, and tower interior is completely accessible. No bolts, no screws!

AIR COOLED BEARINGS . . . Unique bearing arrangement gives longer life from bearings with less maintenance. External grease fittings make lubrication easy.

ALL PURPOSE UTILITY SUMP . . . Flushing and cleaning tower basin is fast and easy with Dover's exclusive new right angle sump.

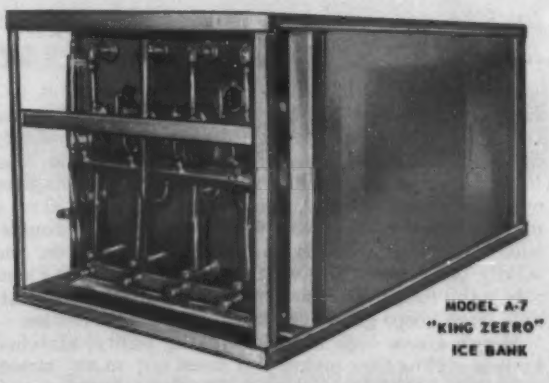
FLANGE - ASSEMBLED CELLS . . . Towers larger than 150 ton capacities can be set up easily and quickly at job site.

NEW, FREE FOLDER. Send today for your copy of the new Series R silLOWette folder. It's full of details, specifications and drawings of the Dover silLOWette tower.

DOVER
MANUFACTURING COMPANY
Dept. 103, 3117 Weatherford Avenue
Independence, Missouri

Add a *"King Zeero"* ICE BANK to Your Refrigerating System for Effectual, Economical Air Conditioning

The "King Zeero" ICE BANK is designed to deliver 32° to 34°F. ice water for recirculation through air cooling coils in exactly the right amount when and where it is needed. It levels off "peak" and "valley" loads. Peak loads many times compressor capacity are easily handled. Ice Banks may be added to increase existing capacity. Refrigerant: Freon, Methyl Chloride or Ammonia.



MODEL A-7
"KING ZEERO"
ICE BANK

The Patented Coils with Built-in Louvres opposed to the flow of water through the ICE BANK provide turbulence. This eliminates a mechanical agitator - insures all the water rubbing all of the ice. No upkeep or repair expense whatever.

The "King Zeero" Ice Storage System of water chilling has definite advantages over direct expansion, or other types of ice accumulators.

Saves power through smaller compressor requirement. Simple construction (no moving parts). Dependable in performance. Low operating and costs.

Let the ice stored during light loads take care of peak loads. The compressor need only handle the average daily load - not the peak.

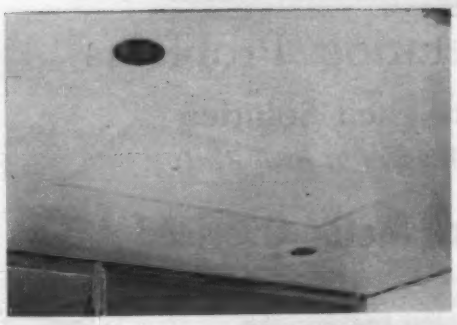
CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

THE KING ZEERO COMPANY
4300-14 W. Montrose Ave. - Chicago 41, Ill.
Manufacturers of Ice Builders - Ice Builder Cabinets - Ice Banks

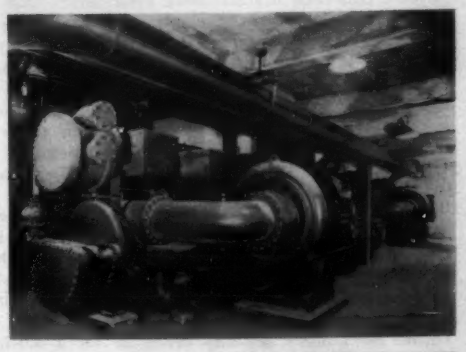
VIEW looking east into elevator lobby of Inland Steel Bldg. on a typical floor showing air conditioning ductwork and steel channels for acoustical metal ceiling system and light fixture hangers.

SHOWS air supply grille in 19th floor ceiling of outer office with cover lowered.

CEILING on typical floors shows air exhaust diffusers and typical light fixtures in acoustical metal ceiling.



LOOKING upward at air supply grille in ceiling of outer office, with grille cover in place on 19th floor.



TWIN 475-ton capacity Trane "CenTraVac" automatic operating refrigeration units provide chilled water for five air conditioning systems serving the Chicago building.

Meets Challenge--

(Concluded from preceding page)

refrigeration system is designed for a temperature of 12°.

Condenser water for the refrigeration equipment is provided by means of cooling towers which are located on the roof of the building core. One hundred per cent outside air is used for cooling whenever its temperature is below the temperature to be maintained in the cold duct.

Each 4-5 Floors Have Separate Cooling System

Because of area and height restrictions, the building is divided horizontally so that each grouping of four or five floors is supplied by a separate air conditioning system.

Major components for three of the systems are in the 34-ft. sub-basement level, while equipment for the other two systems is installed in the service tower. Heat for the building comes from boilers totaling 1,050 hp. fired by service gas and fuel oil. All areas below grade are mechanically heated and ventilated.

Strategic location and architectural design of the building provided air conditioning advantages. Across the street to the west, the First National Bank building shades the exposed side of the office building from the afternoon sun. In addition, 14 4-ft. deep steel exterior support columns running the full height of the building along its east and west walls act as vertical shades when the sun is in the southwest.

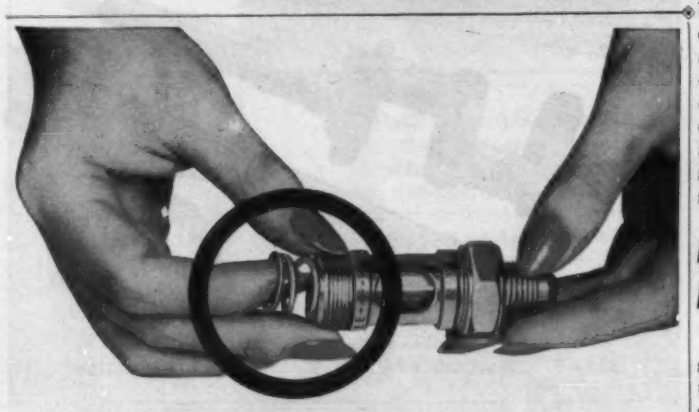
Lau Film Shows Blower Production

DAYTON—A new 20-minute sound and color film shows, for the first time, how the many shapes and sizes of blowers are produced by Lau Blower Co.

W. W. Morrisey, blower sales manager, says the film was produced to acquaint both customers and trade associations in the air conditioning and heating fields with the extensive manufacturing process necessary to produce a modern blower.

Called "The Inside Story," the film shows the step-by-step process of converting raw steel into blower wheels and complete blower assemblies. It follows the production through the modern Dayton plant while the sound narration describes each phase in detail.

The new film is produced in 16 mm. size. It is available, without charge.



SHE'S PUTTING SPRINGS IN E-Z-SEE LIQUID INDICATORS

To you, E-Z-See liquid indicators with spring compensated gaskets mean NO LEAKS—with Refrigerant 12 or Refrigerant 22—at operating pressures through 500 p.s.i. and operating temperatures up to 200° F. and down to minus 40° F!

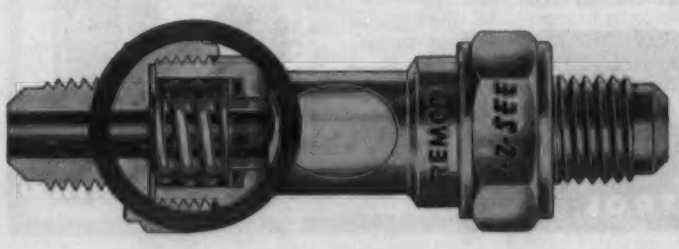
Double port, easy to see through, spring compensated E-Z-Sees are available with male flare x male flare, male flare x female flare and with extended sweat connections which permit soft or silver soldering without disassembly.

E-Z-Sees are also available with a very sensitive FLO indicator flap directly in the refrigerant stream. With this sensitive flap all variations in flow are instantly indicated.

The full story is given in Bulletin R-11. Write today for your copy.

AVAILABLE TO THE TRADE THRU WHOLESALERS

REMCO INC.
ZELIENOPLE, PA.



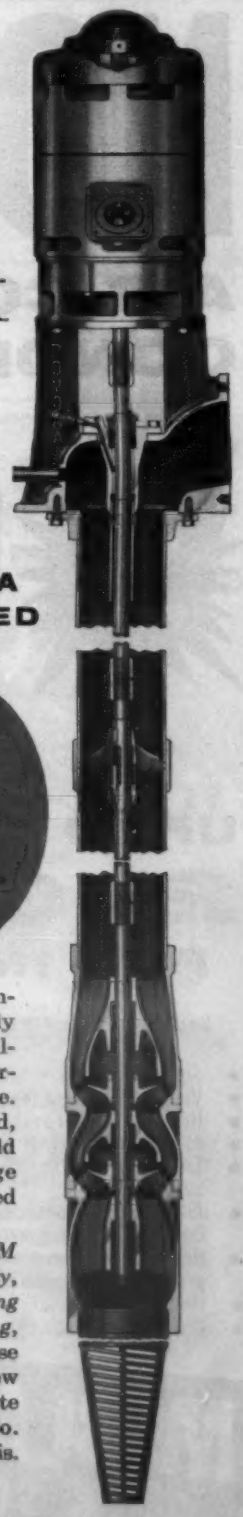
We Specialize In

Cleaning & Balancing Large Air Conditioning and Ventilating Duct Systems

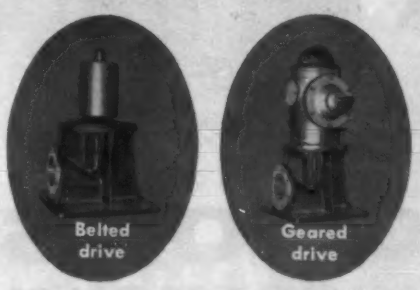
We Go Anywhere

AAA VENTILATION CLEANING SERVICE
Ralph Fields
500 W. Willis, Detroit, Mich.
Phone Te 1-2707

You'll want to look into this pump



NEW F-M POMONA WATER-LUBRICATED TURBINE PUMP



For ruggedness of construction, simplicity of maintenance, and strictly quality design throughout—this all-new Fairbanks-Morse Pomona turbine pump is today's greatest value. No other pump is so easily installed, so easy to adjust for varying field conditions, so simple to change between electric, belted or geared drive.

Ask for details on this new F-M Pomona pump for raw water supply, air conditioning, refrigeration, cooling towers, sump pumping, dewatering, etc. Contact your Fairbanks-Morse Sales Engineer today. Ask for new illustrated Bulletin 6957-1. Or write Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Illinois.

FAIRBANKS-MORSE
a name worth remembering when you want the BEST
PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

Refrigeration Problems

And Their Solution

(As Written by Paul Reed)

How To Figure Motor Overload

QUESTION: I have several machines in an institution that employs a full-time maintenance man whose work is mostly electrical. He replaces fluorescent lamps, ordinary incandescent lamps and fuses, makes minor repairs, and keeps motors oiled and cleaned up. He claims that most of the motors on the refrigerating machines that I have installed there are badly overloaded, and he has the superintendent on my neck.

There is one in particular that they insist needs a bigger motor. At present it is not giving them any trouble, doesn't blow fuses, and the head pressures are about right. So I don't see any sense in changing it. But I want something to show them that will prove to them that the motor is okay.

It is a 1-hp. machine hooked up to 230 volts, and operates an 8 by 10 walk-in with a blower coil. Suction pressure runs about 23 lbs. on an average, with a head pressure from about 100 to 175 lbs., depending on warmth of the room.

The nameplate on the motor shows 13 amperes at 115 volts, 6.5 amperes at 230 volts, full load. When the institution's maintenance man checked it and his ammeter showed 8.5 amperes, he claimed that the unit is overloaded about one third, and that I ought to put on a 1.5-hp. motor instead.

I got a wattmeter and checked the unit. The reading showed 1,250 watts. As I understand it, watts are equal to the volts times the amperes, so I told him that there must be something wrong with his ammeter, for 1,250 watts divided by 230 volts give about 5.5 amperes, which is less than the 6.5 amperes shown on the nameplates as full load. On the other hand, 1 hp. is supposed to equal 746 watts. So according to that, the motor is overloaded at 1,250 watts. Will you please straighten us out on this?

ANSWER: You are both right and you are both wrong. The motor *is* overloaded about 31% and his ammeter is probable accurate, for the current should be about 8.5 amperes under fairly heavy load conditions. The motors on air-cooled refrigerating machines are designed to carry 40% overload indefinitely, so there is nothing to get excited about.

Putting it another way, the motor nameplate says that it is a 1-hp. motor, but you could call it a 1.4-hp. motor—if you wanted to put it on a full load basis. So in reality, this motor is only loaded up to about 93.5% of what it could safely carry indefinitely. Tell the maintenance man not to worry. The manufacturer of the refrigerating machine knew what he was doing when he put that motor on.

You, however, are a little mixed up about watts. They are not equal to volts times amperes in an a.c. motor, only in a d.c. motor. You obtain wattage by multiplying the volts by the amperes. In an a.c. motor you multiply the volts by the amperes, *but* you must then multiply by what is known as the "power factor." The power factor is the percentage of the amperes that are really effective in producing power and that therefore show up (along with the volts) in watts on the wattmeter.

In your case, 230 volts multiplied by 8.5 amperes equals 1,955, which you can call volt-amperes. To convert this volt-ampere figure into watts, you would have to multiply it by about 63.9% to get your wattmeter reading of 1,250 watts. So the power factor in that case is 63.9%. This is about what you would expect for such a motor. Small single-phase motors have power factors of about 45% to 70%, depending upon how much they are loaded.

To be more accurate, a motor does not in itself have a power factor, but it has certain characteristics that cause a power factor of the electric current. So it is customary to refer to the power factor of the motor.

Now as to the 746 watts against the 1,250 watts. In the first place, we found that the motor was overloaded 31%, so 746 would have to be multiplied by 1.31 to get the watts for a 1.31-hp. motor instead of a 1-hp. motor. This will give us 977 watts instead of 746 watts.

It is true that 746 watts represent 1-hp., but *only* if the motor were 100% efficient. No machine is 100% efficient; some of the energy put into the machine is lost and does not go into producing power. An electric motor has relatively high efficiency as compared with gasoline engines, steam engines, and some other forms of machines, which may attain only 15% efficiency, or even less.

If your 1.31-hp. motor were 100% efficient, it would draw 977 watts. It actually draws 1,250 watts so it is 977 ÷ 1,250 or 74.5% efficient, which is about in line with what might be expected of that size motor.

The main issues in this whole affair are that your customer understands that his installation is quite normal, that his motor is the right size for that job, and that he can actually disregard the horsepower rating on the nameplate. It is a rather odd and somewhat complicated situation that has developed over a period of years, but certainly nothing for your customer, his maintenance man, or you to worry about.

Paragon Names Platt, 3 Others Vice President

TWO RIVERS, Wis. — Paragon Electric Co. has announced the appointment of four new vice presidents and the election of a new director.

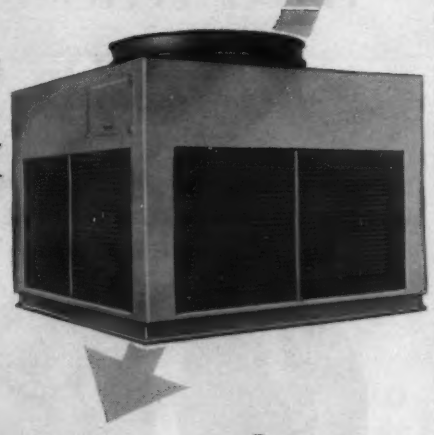
New vice presidents are G. J. Platt, executive vice president and assistant treasurer; J. R. Kenny, vice president-finance, treasurer, and assistant secretary; R. W. Eldred, vice president-sales; and J. J. Everard, vice president-engineering.

Named a director was J. R. Kenny, treasurer of the firm. Other directors were reelected.

NOW!

AIR COOLED CONDENSERS

OF HEAVY DUTY DESIGN



UP TO

200 TONS

PER INCREMENT!

Look at these FIRSTS in air cooled condenser design —

- Square design now permits larger tonnage per unit in smaller space.
- Vertical discharge, slow-speed axial flow fans.
- Heavy structural angle frame — supports coils and fan.
- All steel surfaces are galvanized and painted for corrosion protection.
- Tru-Air helical fin tubing, the most efficient heat transfer surface available.
- All coils interconnected at factory, requiring only one refrigerant inlet and one refrigerant outlet.
- Head pressure control through modulating discharge dampers or programming of individual coils.
- Units can be headered for air-to-air HEAT pump applications.
- Unlimited tonnage can be obtained by combining two or more units.

M. BLAZER & SON

PASSAIC NEW JERSEY

Send today for Bulletin AC-3 that gives details, ratings and helpful information.

HEATING AND COOLING COILS • SPRAY COIL DEHUMIDIFIERS • • AIR CONDITIONING AND MULTIZONE UNITS TO 50,000 CFM AND 9" TOTAL STATIC • COOLING TOWERS • MECHANICAL DEHUMIDIFIERS TO 50 TONS • SLUG ELIMINATORS

SHAFTS *by* MODERN

Shafts by Modern now power compressors for the leading lines of commercial refrigeration and air conditioning units. For precision SHAFTS, in quantity, consult us. Send blueprints for quotation.

SINCE 1924...

Modern Machine Works, Inc.

Pioneers in Shaft Manufacture

5354 S. KIRKWOOD AVENUE CUDAHY, WISCONSIN

AN IMPROVED COMBINATION STARTER for extra safety

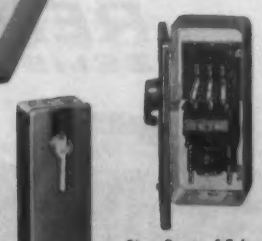
Several changes in the Allen-Bradley Bulletin 712-713 combination starters make them the best starters on the market for your air-conditioning and refrigeration jobs.

The new operating lever has been restyled and structurally improved. The disconnect switch can now be locked OPEN—or also CLOSED, where operating conditions require this feature—with three padlocks—and any kind of padlock can be used. In Bulletin 712, with the disconnect lever in the OFF position, and the cabinet door open, you can plainly see that the moving contacts are open. Also, the incoming line connections are covered to prevent accidental contact.

A-B combination starters take *less* time to install than separate units . . . and provide greater safety. Specify Bulletin 712 with disconnect switch or Bulletin 713 with ITE circuit breaker. Write for catalog, today.

Allen-Bradley Co.
1313 S. First St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

BULLETIN 712 combination starters make a neater, safer, and more attractive installation.



Size 1—to 7½ hp, 220 v; 10 hp, 440-550 v.

Size 2—to 15 hp, 220 v; 25 hp, 440-550 v.

ALLEN-BRADLEY

MOTOR CONTROL

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

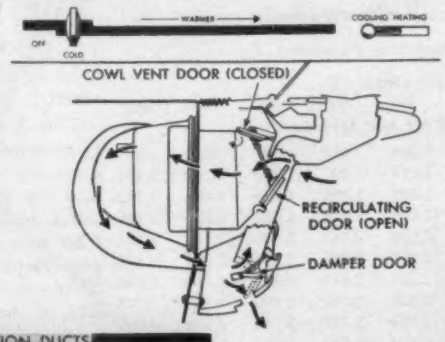


FIG. 3—Maximum cooling is obtained with 100% recirculated air, as this view from left side indicates. Note position of control levers in view at top.

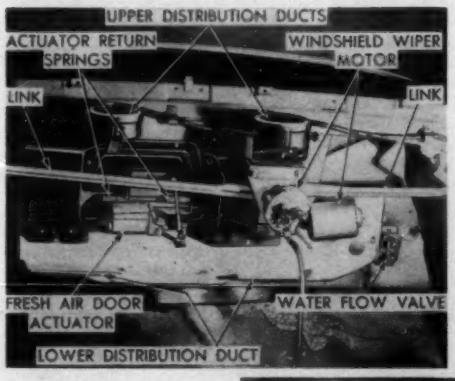


FIG. 4—Another view of components in Chrysler system from passenger compartment.

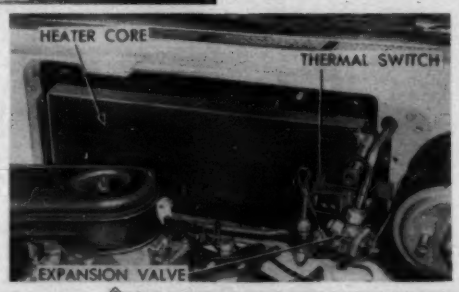


FIG. 5 — Thermostat in evaporator-heater assembly cycles magnetic clutch to prevent icing of evaporator.

CHRYSLER (2)

Controls

Controls of the 1957 Chrysler air conditioner-heater system permit selection of blower speed; proportioning of air discharged toward floor, roof, or passengers; choice of heating or cooling, and control of air temperature on cooling or heating. The controls are mounted on the car instrument panel.

Blower and air direction control dials are mounted on concentric shafts. The inner switch controls the blower motor speed. Blower motor is of three-speed design.

Outer dial is connected by a flexible cable to a damper door in the air distribution duct. When this dial is moved to "Up" position, the damper is so positioned to direct all air from the conditioner-heater assembly to the discharge grilles on the instrument panel. In the "Down" setting, this dial directs all air to the lower discharge outlet. This control dial can be placed at intermediate positions so that air is delivered to both upper and lower outlets.

Two other controls (Fig. 3) are provided in the 1957 Chrysler system. Main control lever moves through a horizontal slot in the instrument panel from an "Off" position at extreme left to a "Cold" position, and continues to the right for "Warmer" air (both cooling and heating).

On the right side of the main control lever is a toggle switch for selection of "Cooling" or "Heating."

Basic principle of the 1957 Chrysler system is to maintain constant cooling on the evaporator (except when icing of the coil threatens) but vary the amount of cooling effect reaching the car interior by regulating hot water flow to the heater core in the evaporator-heater housing.

Main control lever operates: (1) the modulating water temperature valve supplying the heater core through a cable; (2) two electric switches, one of which energizes a solenoid valve in the high pressure engine oil line to a power piston (Fig. 4) operating the fresh air and recirculating air damper doors; the other switch energizes the circuit to a rheostat and heater element on part of the water temperature valve, and (3) rheostat controlling heater element on water temperature valve.

The toggle switch permits energizing the compressor clutch circuit and the heater element on the water temperature valve when it is in "Cooling" position. Main control lever, however, has to be moved from its "Off" position to energize these circuits when the toggle switch is set for "Cooling."

When toggle switch is set for "Heating" neither of these two circuits can be energized regardless of position of main control lever.

With the toggle switch in "Cooling" position, moving the main control from "Off" to "Cold" results in the following:

1. Compressor clutch is engaged. (It operates constantly now except when thermostat (Fig. 5) disengages clutch momentarily to prevent icing of evaporator.)

2. Heating element on water temperature valve is energized.

3. Hot water valve to heater core is shut off.

4. Fresh air intake door is closed and recirculating door is open, giving 100% recirculated air.

(Fresh air and recirculating air doors are connected to same power piston so that when one is open, other is closed, and vice-versa. Piston is powered by high pressure oil from engine and is controlled by solenoid valve.)

With toggle switch still on "Cooling," moving the main control lever ⅜ in. to the right of the "Cold" position results in the following:

1. Solenoid is de-energized, allowing the power piston to close recirculating air door and open fresh air door to permit 100% outside air to enter system.

2. Lever mechanism picks up cable to water temperature control valve and prepares to open valve.

With toggle switch still on "Cooling," moving the main control lever farther to right results in the following:

1. Water valve is opened, allowing hot water to enter heater core.

2. Rheostat supplies more current to resistance heater on water control valve.

3. Car temperature increases.

Purpose and operation of the resistance heater, known also as the "fooler" element, on the hot water control valve (Fig. 6) is explained as follows:

The hot water valve which admits water to the heater core is thermostatically controlled with a manual over-ride to permit manual selection of amount of heating or cooling desired.

The "fooler" element is a resistance heater around which is coiled a secondary capillary tube from the water control valve. On the heating cycle this valve operates over a temperature range of about 75° to 130° F. With the heater or "fooler" element energized during cooling, however, effective operating range of the water valve is from approximately 40° to 75° F.

By supplying additional heat to the capillary tube, the resistance heater "fools" the water valve thermostat, causing it to open the valve at a lower temperature than for normal winter operation.

When ventilation without cooling or heating is desired, toggle switch is placed on "Heating" and control lever moved to "Cold." This admits 100% fresh air which is neither heated or cooled.

Moving the main control lever to the right of "Cold" with the toggle switch on "Heating" opens the hot water valve and admits hot water to the heater core in response to the thermostat setting. Fresh air only is supplied for heating.

Wiring

Wiring diagram of the 1957 Chrysler air conditioning and heating system is shown in Fig. 7.

(To Be Continued)

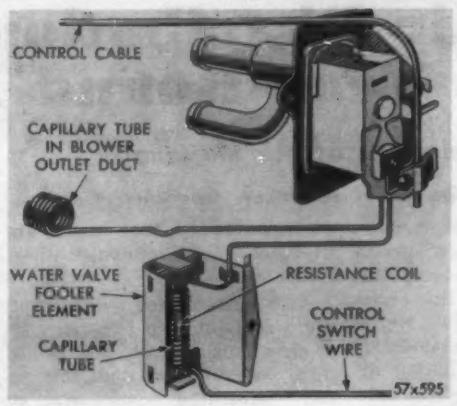


FIG. 6—Hot water control valve and "fooler element" provide control of reheating and thus temperature delivered by air conditioner.

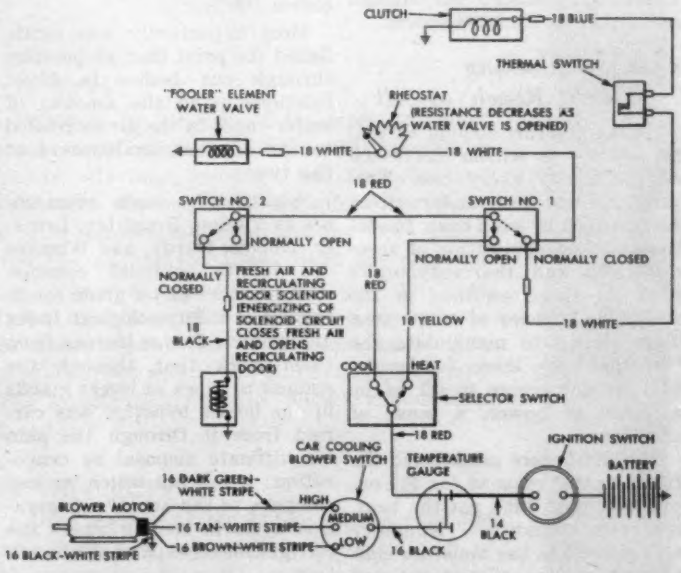
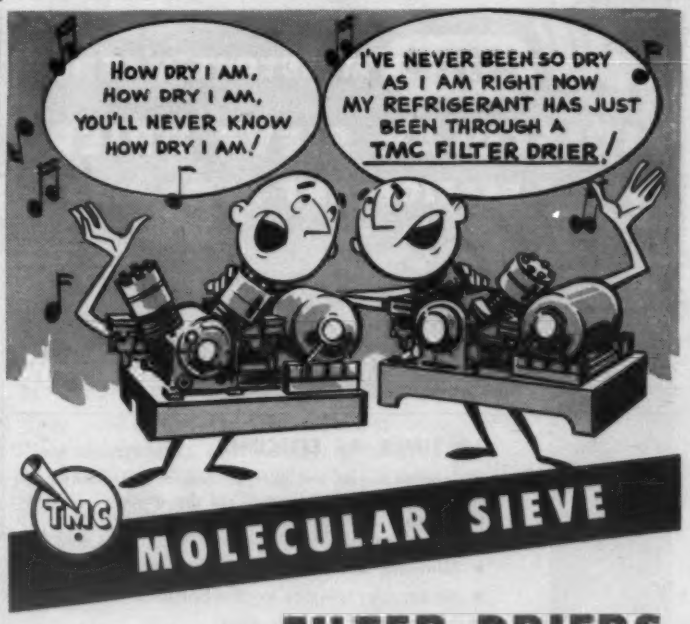


FIG. 7—Wiring diagram of 1957 Chrysler air conditioning and heating system.


HOW DRY I AM, HOW DRY I AM, YOU'LL NEVER KNOW HOW DRY I AM!
I'VE NEVER BEEN SO DRY AS I AM RIGHT NOW MY REFRIGERANT HAS JUST BEEN THROUGH A TMC FILTER DRIER!
TMC
MOLECULAR SIEVE

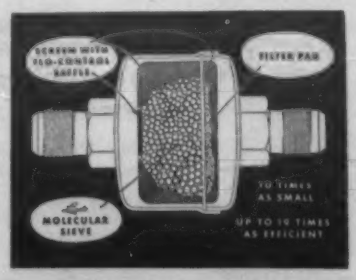
FILTER-DRIERS

1/10 THE SIZE OF OLD-STYLE DRIERS
19 TIMES AS EFFICIENT

Test them and you, too, will join the chorus singing the praises of TMC Filter-Driers with Linde Molecular Sieve. Their radically improved Moisture Removal, Filtration, Acid Removal and Pressure Drop have been proved by nationally recognized laboratories *and approved as original equipment by foremost manufacturers.*

SAVE ALL ALONG THE LINE

Fifteen-ton TMC Filter-Drier fits palm of your hand...saves space in your system, in your stockroom, in your service trucks. Simplified line means simplified ordering, reduced inventory, lower investment. PRICES... you'll get a pleasant surprise! It will pay you to write for QUESTIONS and ANSWERS Bulletin 1157 RIGHT NOW!



TUBE MANIFOLD
CORPORATION
435 BRYANT STREET • N. TONAWANDA, N. Y.
Another Product of the World's Largest Manufacturer of Liquid Receivers

Air Distribution Requirements In Year-Round Air Conditioning

Part 2—Fundamentals of Air Handling

By Frank D. Klein, Chief Engineer, Governair Corp.

Part I of this series, it must be admitted, has been pretty bone-dry stuff. Fundamentals usually are. However, this series is directed toward a full appreciation of the basic fundamentals involved in air contitioning atmospheres to create conditions equivalent to the Physiological Index of Comfort for human occupancy of confined spaces.

Comfort Cooling Within Reach of All

Today comfort cooling as well as heating is within the reach of practically every one. This progress has been underwritten and created by such basic fundamentals and application of aerodynamics and thermodynamics such as those outlined in the foregoing articles of this series. This ability to manipulate the "weather" by these fundamentals should create in all of us a sense of power, a sense of creation.

In Part I were established the fundamental reasons for the expression that, "it's not the heat, it's the humidity." Humidity was related to the moisture content of the air atmospheres and tied it in with temperature. It was established that warm air will hold more moisture than colder air.

Also established was that there is a limit to the capacity of air atmospheres to hold moisture, and recognition of this as the "saturated" condition at which the Relative Humidity becomes 100%.

Most importantly was established the point that we perspire through our bodies in direct relationship to the amount of water vapor in the air as related to the existent temperature at the time.

Scientifically, such researchers as Yaglou, Houghten, Drinker, Dubois, Hardy, and Winslow set out to establish common denominators under given conditions for a Physiological Index of Comfort. It was learned from their work that through the endless network of sweat glands in our bodies moisture was carried from it through the skin for ultimate disposal by evaporation; a process which we can compare to the actual refrigeration cycle in cooling where the refrigerant on expansion absorbs heat.

Learned from the investigations of Evaporation and Vaporization that the rate of both are affected by temperature and air movement not withstanding air moisture itself. Recognized is the fact that these rates must be controlled and directed toward heat dissipation in order to accomplish the Physiological Index of Comfort.

Air which has been conditioned to accomplish the purpose of supporting the Physiological Index of Comfort must BE IN MOTION. The aerodynamic properties and the aerodynamic processes involved in putting air in motion, keeping it in controlled motion, and directing its motion is the subject of Part II of this series.

Air in motion follows pretty much the same physical laws as that of any fluid, that is, the flow of each can be considered to conform to the same physical characteristics as long as each are in the non-compressible category.

Differential Pressure controls the flow of any fluid. The relationship of atmospheric pressure to that area in which differential pressure occurs is unimportant; what is important are the ranges of the differential pressures which establish the fundamental characteristics of the flow phenomena.

To illustrate this simply, imagine a stream of water from a water tap introduced into a pipe equivalent in ID to that of the faucet; however, shrink the end of the pipe down to where its ID is drawn sharply down to 25% of that of the original inside diameter by screwing on a plug at the discharge end having a hole drilled in its center equivalent to this reduction. The discharge hole becomes an orifice.

Let us say that the pressure and velocity of water through the pipe to the discharge orifice is known; the water will reach, by the known velocity, the orifice where it will be expelled at a higher pressure and higher velocity than that in the pipe itself. The original area of the stream of water will be contracted by the smaller orifice opening and exterior to the orifice, at its smallest area the Vena Contracta will occur. ("Vena" from the Latin meaning vein and "Contracta" conjugated from the Latin Contractus, meaning to shrink, constrict.)

The Vena Contracta will be approximately 0.6 times the diameter of the orifice opening, and its location will be a distance downstream equal to about 0.50 times the diameter of the pipe depending on the velocity of the water in the pipe and the size of the orifice.

Table 5—Velocities of Air Corresponding to Various Pressures and Temperatures

(At 29.92 in. Hg Barometric Pressure)

Pressure, Inches of Water	Temperature, °F. 40	50	60	70	80	90	100	150	200
	Velocity, Feet per Minute								
.05	870	879	887	896	904	912	921	961	1,000
.10	1,230	1,242	1,255	1,267	1,279	1,290	1,302	1,359	1,414
.15	1,507	1,522	1,537	1,552	1,566	1,581	1,595	1,665	1,732
.20	1,740	1,757	1,774	1,792	1,809	1,825	1,842	1,922	1,999
.25	1,946	1,965	1,984	2,003	2,022	2,040	2,060	2,149	2,235
.30	2,131	2,152	2,173	2,194	2,215	2,235	2,256	2,354	2,449
.35	2,302	2,325	2,347	2,370	2,393	2,414	2,437	2,543	2,645
.40	2,461	2,485	2,510	2,534	2,558	2,581	2,605	2,719	2,828
.45	2,610	2,636	2,662	2,687	2,713	2,737	2,763	2,883	2,999
.50	2,751	2,779	2,806	2,833	2,860	2,886	2,913	3,039	3,161
.55	2,859	2,887	2,915	2,944	2,972	2,999	3,027	3,159	3,285
.60	3,014	3,044	3,073	3,103	3,133	3,161	3,191	3,330	3,463
.65	3,137	3,168	3,199	3,230	3,261	3,290	3,321	3,465	3,604
.70	3,256	3,288	3,320	3,352	3,384	3,414	3,447	3,597	3,741
.75	3,370	3,403	3,436	3,469	3,502	3,534	3,567	3,723	3,872
.80	3,480	3,514	3,549	3,583	3,617	3,650	3,684	3,845	3,999
.85	3,588	3,623	3,658	3,694	3,729	3,763	3,798	3,963	4,122
.90	3,692	3,728	3,764	3,801	3,837	3,872	3,908	4,078	4,242
.95	3,793	3,830	3,857	3,905	3,942	3,978	4,015	4,190	4,358
1.00	3,891	3,929	3,968	4,006	4,044	4,081	4,119	4,299	4,471
1.25	4,350	4,393	4,436	4,479	4,522	4,562	4,605	4,806	4,998
1.50	4,767	4,814	4,860	4,907	4,954	4,999	5,046	5,266	5,477
1.75	5,148	5,199	5,249	5,300	5,351	5,399	5,450	5,687	5,915
2.00	5,502	5,556	5,610	5,665	5,719	5,770	5,825	6,078	6,322
2.50	6,152	6,212	6,273	6,334	6,394	6,452	6,512	6,796	7,068
3.00	6,739	6,806	6,872	6,938	7,005	7,068	7,134	7,445	7,744
3.50	7,280	7,352	7,324	7,495	7,567	7,635	7,707	8,043	8,365
4.00	7,782	7,859	7,942	8,012	8,089	8,162	8,238	8,597	8,942
5.00	8,701	8,786	8,872	8,958	9,043	9,125	9,211	9,612	9,997
6.00	9,529	9,623	9,717	9,811	9,905	9,994	10,088	10,527	10,949
7.00	10,296	10,397	10,499	10,600	10,701	10,798	10,899	11,374	11,830
8.00	11,004	11,112	11,221	11,329	11,437	11,541	11,849	12,156	12,644
9.00	11,673	11,788	11,903	12,018	12,133	12,243	12,358	12,896	13,413
10.00	12,304	12,425	12,546	12,667	12,788	12,904	13,045	13,592	14,137

Basic Formulae

Air in motion from one point to another is of course the process involved in air distribution in the heating and cooling cycle. In accomplishing this motion for our purposes here we are normally involved only with low pressures. (High pressure duct and conduit systems are the exception of course.) Air flowing in motion in these pressures generally conform to the following basic formulae:

$$\text{VELOCITY} = 1{,}096.5\sqrt{\frac{h}{w}}$$

with Velocity in Ft./min.

h—representing Head in in. initiating flow.

w—representing weight in lbs./cu. ft. of air.

Previously it was established that for purposes of general standardization we always refer to air in the "Standard" condition, which is air at 70° F. and 29.92 in. of Mercury Barometric Pressure, thus to translate the above into Standard Air the Formula becomes:

$$\text{VELOCITY} = 1{,}096.5\sqrt{\frac{h}{.0749}}$$

and

$$\text{VELOCITY} = 4{,}005\sqrt{h} \quad \text{and}$$

$$h = \left(\frac{V}{4005}\right)^2$$

When air temperatures and pressures are considered other than that expressed in Standard Air, it will be found that the air velocity varies according to the square root of the absolute temperature directly, and inverse to the square root of the Barometric Pressure.

In Table 5 can be found in condensed form typical air velocities at various Pressures and Temperatures. These will be practical to our calculations.

NEW KMP MOISTURE MAGNET
MOLECULAR SIEVE DRIER
FINEST REFRIGERANT DRIER MADE

19 TIMES AS EFFICIENT

Molecular sieves, the newest class of adsorbents, are the most efficient desiccants on the market . . . have the ability to adsorb at high temperatures up to 19 times more water.

- Eliminate acid corrosion
- No capacity loss due to oil adsorption
- Minimum of pressure drop
- Greater reserve capacity

SMALL IN SIZE . . . ONLY FIVE SIZES HANDLE ¼ TO 10 TONS

A standard drier can be reduced to a fraction of its usual size with no loss in drying capacity because of greater efficiency of Molecular Sieves. Only five sizes are necessary to handle installations up to 10 tons. This means a minimum inventory and stock control.

ALL COPPER AND BRASS CONSTRUCTION WITH MONEL WIRE CLOTH FILTERS

REASONABLY PRICED

PERFORMANCE RATED

KMP Moisture Magnets are tested and rated in accordance with ARI STANDARD 710

WRITE for full information. Inquiries welcomed.

KMP KENMORE MACHINE PRODUCTS, INC.
LYONS, NEW YORK

YOU CAN'T HARDLY TOUCH OUR BARGAINS

That's because they're so very *hot*. Every month Harry Alter's buyers fill our famous Flyer with all kinds of special closeout bargains carefully picked from manufacturer's surplus. You can save 50% or more, from the regular wholesale price.

We're Real Specialists in

REFRIGERATION · AIR CONDITIONING · ELECTRIC MOTORS

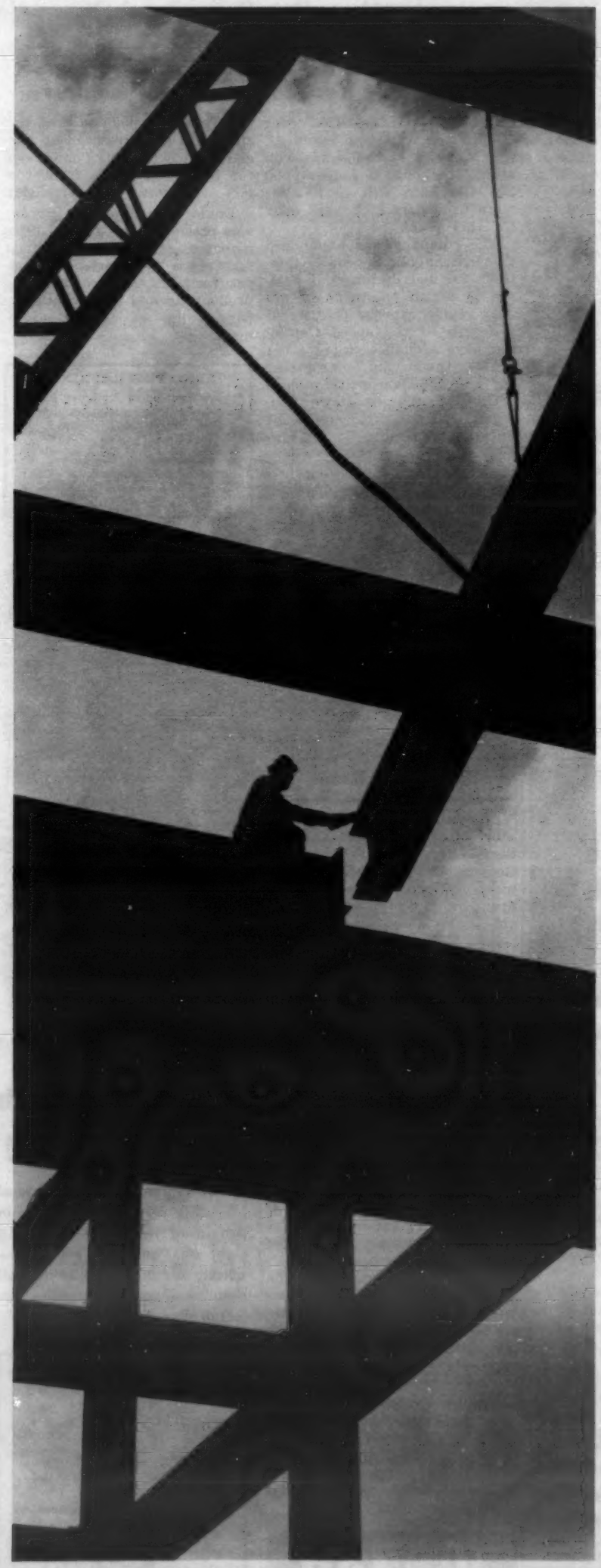
SUPPLIES and PARTS

SAVE MONEY, time and effort by ordering from our new *Dependabook*, the most complete catalog of all. 160 pages. Over 10,000 items carried in stock. *Wholesale only.* Your orders filled really fast by mail, or picked up at one of six big warehouses.

Write on your letterhead for the 1958 DEPENDABOOK . . .
Also our monthly Flyer of surplus and close-out Bargains.

The HARRY ALTER CO., Inc. Chicago 16, Ill. 1717 S. Wabash Ave. New York 13, N. Y. 334 Lafayette St. Dallas 2, Tex. 122 Parkhouse St. Atlanta 10, Ga. 690 Stewart Ave., S.W.

FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES



Air conditioning equipment* for large buildings is bought and installed by readers of the NEWS

WHO SPECIFIES OR BUYS?

Engineers who are employed by all four of the most important factors: (1) large air conditioning contractors, (2) consulting engineers and architects, (3) large buildings and factories, and (4) the OEM manufacturer—any one or all can affect the sale of your product if it is to be installed in a large building. As consulting engineers will tell you and as you know, there are very few "closed specifications." The vast majority is "or equal" or "open end"—by type but not by brand name. Therefore, to get the most effective sales results, you want to influence more than just one engineering group. You should sell all the buying factors. AIR CONDITIONING & REFRIGERATION NEWS can do this job most effectively.

HOW MUCH WILL THEY BUY?

Estimates indicate a total volume of ten billion dollars over the next ten years. Aside from new construction, the saturation of air conditioning installations in offices is less than five per cent, and in factories — *less than one per cent.* In 1957, this market was estimated at nearly 600 million dollars, a gain of almost fifteen per cent over 1956. This increase was the largest in the industry.

* WHAT PRODUCTS DO THEY BUY?

In addition to air conditioning units and their usual accessories, such as condensers, cooling towers, coils, refrigerants, and motors, engineered air conditioning systems for large buildings, factories, etc. require such items as *ducts and duct materials . . . controls . . . piping . . . insulation . . . air moving equipment . . . air cleaning and washing systems . . . pumps . . . diffusers and grilles . . . boilers . . . heat exchangers . . . furnaces . . . dehumidifiers . . . humidifiers . . . vibration eliminators.*

WHAT DO THEY READ?

Just as you depend upon your newspaper for the latest news and information, so do these contractors and engineers turn to AIR CONDITIONING & REFRIGERATION NEWS for the timely facts and information concerning their job, their industry. The NEWS is the only weekly and the only newspaper in the industry. (And it has a 32 year history of dependable *accuracy.)*

Every Monday morning they pick it up — *and start reading!* There is no other complete news source available to them and, once read by the subscriber, it is passed along to others in the company (on an average of more than four). The NEWS contains the latest news stories on installations, products, and ideas every week—the kind of information contractors and engineers need.

In 1957, advertisers of air conditioning units and components for engineered systems used more than *twice* the volume of advertising in the NEWS as in any other industrial publication. Contact your local NEWS representative or write for more facts on how the amazing advertising power of the NEWS can help you get a bigger share of the large building market.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Weekly Newspaper of the Industry

The leading air conditioning publication with highest paid circulation in the field.

450 WEST FORT STREET • DETROIT 26, MICHIGAN

DETROIT, 450 West Fort St., WOodward 2-0924, J. B. Sullivan
NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928-9, Robert M. Price
CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon

Now Representing...

Heat Controller, Inc. (Jackson, Mich.) — J. K. NEUHAUSER SALES CO., Chicago has been named "Comfort-Aire" electric dehumidifier sales representative in Illinois, Iowa, and southern Wisconsin; C. W. GUPTIL CO. for Minnesota, North and South Dakota; and P. M. DAY & SON in Michigan.

Remco, Inc.—C. J. BOMANZ SALES CO., Arlington Heights, Ill. has been appointed sales representative for north central states.

Trane Co.—CLIMATE CONTROL, INC., Decatur Ga. and F. H. McDONALD, INC., Miami, Fla. have been named authorized source for packaged air conditioning equipment in their respective areas.

Westinghouse Electric Corp.—UNIVERSITY SHEET METAL WORKS, Seattle has been appointed distributor for packaged residential and commercial air conditioning units, oil and gas-fired furnaces, and "Precipitron" electronic air cleaners.

Mitchell Mfg. Co., Div. of Cory Corp.—Appointment of GRAYBAR ELECTRIC CO., INC., Washington, D. C. as distributor in that area for room air conditioners and dehumidifiers has been announced.

York Corp., subsidiary of Borg-Warner Corp.—SAGINAW DISTRIBUTORS, INC., Saginaw, Mich. has been named franchised industrial associate outlet, a new-type arrangement for distribution of industrial refrigeration and air conditioning products.

Amana Refrigeration, Inc.—Appointment of REPUBLIC DISTRIBUTING CO., Grand Rapids, Mich. as distributor in 26 counties of central Michigan for freezers, freezers-plus-refrigerators, "Deep-freeze" freezers, and air conditioners has been announced.

Whirlpool Corp.—LEO J. MEYBERG CO., Fresno, Calif. has been named distributor of the full line of home appliances in 11 central California counties in addition to its present territory of northern California and northwest Nevada. EDCO DISTRIBUTING CO. of Fresno was formerly the outlet in the central state.

Barnebey-Cheney Co. — R. M. HEPNER of HEPNER AIR FILTER SERVICE, Cleveland has been appointed sales representative for activated charcoal air purification equipment in that area.

Buensod-Stacey, Inc.—FONTANESI & KANN CO., Detroit, has been named to handle "Dual-duct" air mixing equipment for commercial and industrial air conditioning systems in the Michigan area.

Bryant Mfg. Co., Div. of Carrier Corp. — BRYANT TRI-STATE, INC., Pittsburgh has been named wholesale distributor for the complete line of heating and cooling equipment.

Southwest Mfg. Co., subsidiary of F. E. Myers & Bro. Co. (Aurora, Mo.)—CHARLES SARGENT has been appointed sales representative for southern Illinois, southern Indiana, Kentucky, and Tennessee with headquarters in Louisville, Ky.

Fedders-Quigan Corp. — RADIO CITY DISTRIBUTING CO., Dallas has been appointed distributor for the Dallas-Fort Worth area.

Nitrogen Div., Allied Chemical & Dye Corp.—CHEMICAL SALES & SERVICE CO., INC., Worcester, Mass. has been named to handle sales for "Barrett Brand" anhydrous ammonia in cylinders.

Via Air Conditioning Sales

Distributors, Dealers Can Win Free Trip To 500 Mile Race In '58 Bryant Contest

INDIANAPOLIS — The order "Gentlemen start your engines," which electrifies thousands who attend the annual Indianapolis 500-Mile Race, will mean a lot more to dealers of Bryant Mfg. Co. this year.

The company has announced an "Indianapolis Speedway Contest" for distributors and dealers in which the winners not only get an expense paid weekend trip to the speed Capitol but have a chance to see a car bearing the Bryant name racing for the $300,000 prize money.

One of the country's top-flight drivers, Ed "Dutch" Schaefer of Floral Park, Fla., has been signed to pilot the "Bryant Special." It will represent hundreds of Bryant dealers and salesmen who are expected to win their way to Indianapolis via air conditioning sales, the company said.

With their wives they will attend the pre-race parade followed by a banquet staged by Bryant at the Severin hotel. A tour of the company's manufacturing and engineering facilities is being arranged along with sight-seeing trips and a fashion show for the women.

To avoid the crowds that throng Indianapolis on race day, space has been reserved on special trains leaving downtown for the track where front row box seats have been arranged.

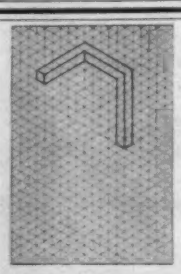
David W. Hoppock, Bryant vice president and general sales manager, said the sales contest features a new series of competitively-priced air conditioning products to add to Bryant's expanded line of cooling equipment.

SEND FOR REPRINTS

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.

Only 40¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.



Isometric Forms for All Types of Layout Work and Isometric Drawing.

AIR CONDITIONING — PIPE — SHEET METAL — STEEL FABRICATING

80 Sheets to Pad. Printed Light Green Ink on White Bond. Sheet Size 8½" x 11", 8½" x 13", 11" x 17".

Send for Samples and Price List of Our Complete Line.

ISO PAD CO., 11325 Long Beach Blvd. Lynwood, California

Death Notices

Nelson P. Palmer, 58, operator of Palmer Refrigeration Service, died recently at Buffalo General hospital after a two-month illness. He operated the firm for the last 18 years at 102 Pearl St., Blasdell.

* * *

Funeral services for **Ervin T. Powers,** 41, and **Robert W. Powers,** 39, brothers, whose bodies were found in their wrecked airplane at Sugar Loaf Mountain near Asheville March 29, were conducted from Thomas Memorial Baptist church, Bennettsville, S. C.

Robert W. Powers, immediate past mayor of Bennettsville, was an engineer and manager of J. L. Powers Plumbing & Heating Co. He was a member of the American Society of Heating & Air-Conditioning Engineers and other contractor groups.

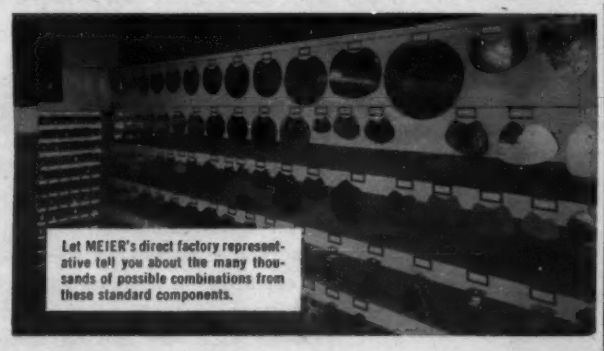
Ervin T. Powers, pilot of the plane, was a mechanical contractor with his father's firm. He formerly served as a pilot on the Atlanta-Fort Worth route for Delta Air Lines.

* * *

Charles G. Bach, 73, former chief engineer for Vilter Mfg. Co., died recently. Employed by the firm for 30 years, he retired in 1945. He was a life member of American Society of Refrigerating Engineers.

NO CUSTOMER IS TOO BIG, NOR TOO SMALL

If YOUR product involves air movement, YOU should know about MEIER propellers


Let MEIER's direct factory representative tell you about the many thousands of possible combinations from these standard components.

Sure, we're proud of our list of impressive, prestige accounts... big, well-known manufacturers, but:

Along with these "Industrial Giants," MEIER is serving a lot of "little fellows," too. Some of the smaller plants without adequate engineering rely entirely on MEIER engineering and technical service. And, from our wide collection of standard components, we're able to produce the right propeller for their products without going into costly tooling and delay in designing a new blade.

Meier Electric & Machine Company, Inc. offers you over 50 years of experience, plus the scientific and technical know-how and equipment necessary to provide you with the correct propeller for YOUR product. With this background of experience—coupled with continuous scientific research, modern production and technical facilities—we're in a wonderful position to serve both large and small manufacturers of products involving air movement. Try MEIER.

MEIER ELECTRIC & MACHINE CO., INC.

3525 East Washington Street • Indianapolis 7, Indiana

Acme INDUSTRIES, INC.

JACKSON, MICHIGAN

manufacturers of QUALITY air conditioning and refrigeration equipment since 1919

ACME AIR CONDITIONING REFRIGERATION

recognized industry-wide

Acme's NEW FLOW-COLD® cooling towers ... the lightest, most compact ever developed

Surprising but true! This lightweight, compact tower delivers a full 7½ tons of cooling capacity at standard conditions. One reason is the new plastic Acme-Pak that stacks 515 square feet of wetted surface in a removable 37-lb. deck. This and many other advanced features are described in a new Flow-Cold Tower catalog that's free on request.

'Phone' or write Acme for details

MARSH Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.

PRESSURE GAUGES and Dial Thermometers for all services

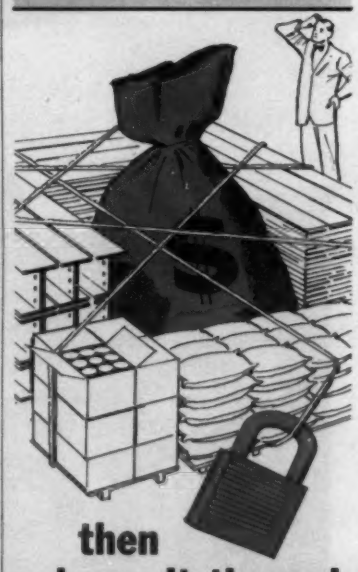
MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.

MARSH INSTRUMENT COMPANY

Sales Affiliate of Jas. P. Marsh Corporation

Dept. D, Skokie, Ill.

CASH TIED UP IN INVENTORY?



then release it through LAWRENCE SYSTEM

Your inventory is prime collateral . . . and Lawrence specializes in providing inventory financing right on your own premises — quickly and economically! For full details call our nearest office collect or send the coupon.

Without obligation please send me your brochure, Golden Catalyst.

Name_____

Firm Name_____

Address_____

Lawrence on Warehouse Receipts ... is like Certified on Checks

LAWRENCE WAREHOUSE COMPANY

NATIONWIDE FIELD WAREHOUSING

37 Drumm St., San Francisco, Calif.
100 N. La Salle St., Chicago 2, Ill.
79 Wall St., New York 5, N.Y.

OFFICES IN ALL PRINCIPAL CITIES

NARDA Chief Says Retailers Need 90-Day Warranty on Major Items

CHICAGO — Retailers need and desire a 90-day warranty period on major appliances, Joseph Fleischaker, president of the National Appliance & Radio-TV Dealers Association (NARDA), told the graduating class of the School of Service Management held at Northwestern university March 26-28.

Speaking at the commencement dinner at Riccardo's, he said: "It makes no reason whatsoever for a $6,000 automobile to have a 90-day warranty and a $150 major appliance to have one that may cost for five years. It is our hope that the manufacturers, and their interest as well as ours, will give this to us. It is our intention, if they do not do this within a year, to fight for it."

Fleischaker complimented the manufacturers on the manner in which they have adjusted production to the market and the quality of service which they give the retailers.

He placed emphasis on the important of dealers assuming full service responsibility, telling the service executives completing the courses "service, like religion, must be preached every hour of every day. Servicemen are the most important people in the table of organization.

The three-day course headed by Frank Pieratt, Pieratt's, Lexington, Ky., a retailer and a member of the NARDA board of directors, was completed by 88 students including retailers, service managers, and factory and distributor service heads.

G-E Cooling Dept.--

(Concluded from Page 1, Col. 5)

K. Rieger, G-E vice president and general manager of the Appliance and TV Receiver division. He succeeds R. H. Jones, who is now directing special studies for the company.

Salmonsen has been with G-E for more than 30 years in various engineering, manufacturing, and management positions.

The air conditioning department operates plants in Bloomfield, N. J.; Trenton, N. J.; and Tyler, Texas. It manufactures packaged air conditioners for commercial, industrial, and institutional use, and drinking water coolers, home heating and cooling equipment, and the "Weathertron" heat pump heating and cooling systems.

The three production sections, and the sales department, will probably be integrated into one operating setup under the new management, it is believed.

Placing of the air conditioning department operations in the Appliance and TV Receiver division group was for the most part one of "finding a place for it in the G-E organizational structure" according to observers familiar with the company's operations, and does not indicate any major change in distribution policies, as Goss pointed out in his statement.

'Bid Shopping' Bill--

(Concluded from Page 1, Col. 2)

McClellan (See March 31 issue of NEWS, page 1). Humphrey asserted he felt that objections to the bill and amendments that would undoubtedly be offered would impede passage this year.

McClellan asserted that re-referral can only be done by a motion agreed to by the majority of the Senate.

"I intend to discuss this matter with Sen. Humphrey as soon as I can, McClellan said. "It may be the bill can be amended on the floor of the Senate and thus its passage expedited and avoid the delay that a re-referral would entail."

A number of associations representing subcontractor groups have voiced objections to provisions in the bill, particularly that it would not prevent bid shopping as originally intended.

Burt Boycott--

(Concluded from Page 1, Col. 5)

resented by the United Steelworkers Union which won bargaining rights at the Akron plant in a contest with the Sheet Metal Workers in 1945.

Since that time, the company charged, the 55,000-member SMW union has refused to install Burt equipment and had induced contractors to reject Burt products.

Protest Fla. UA Locals Merger--

(Concluded from Page 1, Col. 4)

ing Contractors Association (RACCA, national) have also looked into the situation. However, the vote on the merger is scheduled to proceed as of this writing.

If the groups do merge, there is some possibility that the contractors might consider the move a nullification of an NLRB certified labor contract which the association has with local 725.

Reason for the contractor opposition to the merger, according to Howard S. Davis, ACRA executive secretary, is that the contractor group spent considerable time and effort in gaining recognition by the UA, and eventually certified by the NLRB, of a group of journeymen skilled in the type of work required on air conditioning and refrigeration installations. What they fear from the merger is that these special workers will become submerged in the larger plumbers' local, and that through the vagaries of union practices, they may wind up with men who do not have the skills needed for their work.

As to the reasons why the merger was proposed, a number of theories have been advanced. Some say it is because work in the plumbing trade has slacked off, and this plus a move by a group of Miami area non-union plumbing contractors to organize into an association and use non-union labor, has resulted in a weakening of the union.

The UA is fighting this move, and has a weapon in its hand in the licensing board, which has a majority of union members.

When your problem is...
SIZE...SHAPE or METAL
your answer is
DEAN
COLD PLATES
"Job Tailored" to your specifications
A baffling problem? Try a Dean Cold Plate made expressly to suit your particular requirements. Made in a variety of metals in cylinders, U's, angles, tanks, etc.
Many shapes
Many sizes
Many metals
DEAN PRODUCTS, INC. 1042 Dean St. STerling 9-5400 Brooklyn 38, N.Y.

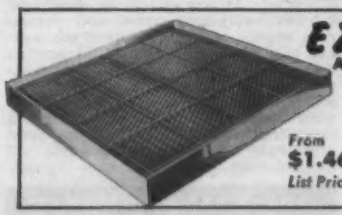
Choice territories now available for sales representatives. Inquiries invited.

NOW... STOP ROOM AIR CONDITIONER AIR FILTER PROBLEMS ...and profitably, too!

WASHABLE ALUMINUM TRIM TO SIZE EZKLEEN FILTER

The perfect solution for these troublesome special sizes. Aluminum . . . easily cut with scissors or knife . . . won't shed particles . . . easy to wash. Eliminates large inventory of special sizes. Packaged in colorful polyethylene envelopes.

$1.75 LIST PRICE



EZKLEEN AIR FILTER FOR STANDARD SIZES

The high efficiency washable, aluminum filter in all standard sizes, in ½", 1" and 2" thicknesses. With the Trim-to-Size Filter, eliminate virtually all room air conditioner inventory problems.

From $1.46 List Price

Plus ODOR REMOVAL Feature for EXTRA PROFITS

A sales feature you can offer only with R P Super Handi-Koter. This one pint container of water soluble Super Filter Coat, the dust, pollen, and odor-removing adhesive, with a built-in detergent, is a fast-selling, profit-making repeat item.

$1.25 List Price

RP Products of Research

RESEARCH PRODUCTS Corporation
Dept. 20, Madison 10, Wisconsin

Yessir, I'm a nudist myself, but I'm sure YOU will enjoy wearing my merchandise.

AMERICAN-Standard*
BRINGS YOU AN UNPRECEDENTED
USE-IT-YOURSELF
AIR CONDITIONING OFFER

It's hard to sell a product you don't use yourself—especially when the customer knows that you don't. Yet some air conditioning dealers are still living in non-air-conditioned homes . . . and conduct business from non-air-conditioned shops and showrooms.

To eliminate this sales handicap, American-Standard Air Conditioning Division presents a new and unique Use-It-Yourself Air Conditioning Offer. This offer enables you to install full-scale air conditioning in your home or place of business at a low cost you would hardly have believed possible. We've gone all out to make the deal irresistible because we know that when your friends, neighbors or customers actually see and feel the benefits your system produces, they too will want air conditioning. As the Du Pont Survey pointed out, *neighbors* of central air conditioning users are the best source of additional sales by a ratio of more than 3 to 1!

Nothing sells air conditioning like air conditioning itself. So *Use-It-Yourself* and watch your sales grow. Your local distributor for American-Standard Air Conditioning Division products is the man to see.

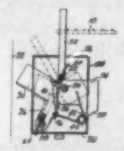
* AMERICAN-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
AIR CONDITIONING DIVISION

PATENTS

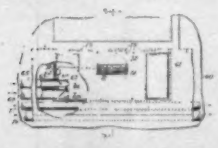
Week of Jan. 7

2,818,825. SAFETY DEVICE FOR REFRIGERATORS. James F. Marek, Mishawaka, Ind.



1. In combination, a cabinet having a removable shelf and a door opening adapted to be sealed by a door, a support, means for mounting said support in said cabinet adjacent to said door opening, an abutment member pivoted to said support and shiftable between a retracted position clear of said door and a projected position intercepting said door in its movement from open to closed position, spring means for urging said abutment member to a retracted position when said abutment member is moved in one direction past a neutral position and to a projected position when said abutment member is moved in the opposite direction past said neutral position. . . .

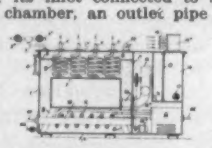
2,819,022. AIR CONDITIONING APPARATUS. Harrison W. Marshall, Pleasantville, N. Y., assignor to Buensod-Stacey, Inc., New York, N. Y.



1. In a high pressure air conditioning system, a pressure reducing air distributing box comprising an enclosure constructed and arranged to receive air at high pressure and reducing the pressure thereof before discharge into the zone, a high pressure cold air conduit connection to said box and a high pressure warm air conduit connection to said box, damper means in each of said conduits controlling admission of warm and cold air at high pressure into said box, damper motor means within said enclosure connected to said damper means. . . .

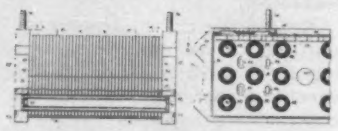
2,819,044. AIR-CONDITIONING APPARATUS. George Bungas, Pittsburgh, Pa.

1. Air conditioning apparatus comprising a cabinet, a transverse vertical partition in said cabinet forming a machinery compartment and an air conditioning compartment, a body of water in said air conditioning compartment, an air receiver chamber in said machinery compartment adapted to receive air to be conditioned, a blower in said machinery compartment having its inlet connected to said receiver chamber, an outlet pipe leading



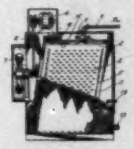
from said blower through said partition into said air conditioning compartment, a plenum chamber mounted in said air conditioning compartment and enveloped by said water. . . .

2,819,045. HEAT EXCHANGER. Richard Henry Pearse, Jr., and Alan George Butt, La Crosse, Wis., assignors to The Trane Co., La Crosse, Wis.



2. A heat exchanger comprising spaced substantially flat tube sheets, a plurality of spaced fins between said tube sheet, said fins lying in planes substantially parallel to said tube sheets, closure means extending along the peripheral edges of the fins to enclose the spaces between the fins and the spaces between the tube sheets and the fins. . . .

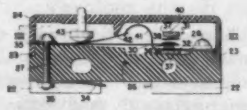
2,819,048. INDUCED DRAFT WATER SAVING AND COOLING TOWER. Lesley L. Gilliland and Roland E. Cedarholm, Gadsden, Ala.



A water saving and cooling tower of the class described comprising, a main outer case approximately oblong in cross section, two similar supporting panels mounted in the case and positioned opposite each other and near the wider opposite walls of the case, said case having a closed flat bottom and partly open top, the bottom edges of said panels resting upon the bottom of the case, each of said panels having a plurality of slanting slots formed in its vertical edge portion and a plurality of horizontal slots formed in its center portion between the slanting slots. . . .

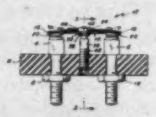
2,819,362. SWITCHES. Theodore Y. Korsgren, Columbus, Ohio, assignor, by mesne assignments, to Robertshaw-Fulton Controls Co., Greensburg, Pa.

8. In a snap switch of the precision type, a contact element supported for movement between "off" and "on" positions; a second contact element stationarily disposed to mechanically locate said movable contact element in the "on" position; means for establishing an electrical connection between



said contact elements before said movable contact element reaches the "on" position determined by said second contact element, said means including a leaf of highly conductive spring material overlapping one of said contact elements and formed to project toward the other.

2,819,365. SNAP-ACTING THERMOSTAT AND MOUNTING THEREFOR. Henry David Epstein, Boston, Mass., assignor to Metals & Controls Corp., Attleboro, Mass.

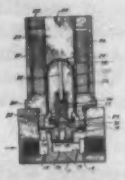


1. A snap-acting thermostat element having an initial creep motion followed by a snap-motion in response to temperature change; said element including a bowed portion and a mounting tongue; said bowed portion being formed of composite, thermally responsive material; a pair of electrical contacts carried by said powed portion in diametrically opposed relation to each other. . . .

2,819,366. THERMOSTATIC SWITCH. Arthur J. Kercher, Berkeley, Calif., assignor of one-half to William Wesley Wicks, San Francisco, Calif.

4. In a thermostatic switch, a contact arm, a movable contact loosely mounted on one side of said arm adjacent one end thereof, a pair of stationary contacts, temperature responsive means engaging the other end of said arm for moving said arm and said movable contact between open and closed positions relative to said stationary contact, and spring means mounted on the side of said arm opposite said movable contact and serving to continuously urge said arm and movable contact to a closed position, said spring means being mounted in a region generally opposite the movable contact.

2,819,432. SOLENOID STRUCTURE. William A. Kay, North Hollywood, Calif., assignor to General Controls Co., Glendale, Calif.



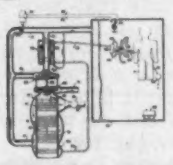
1. In a solenoid structure of the type which comprises a frame providing a stop member mainly of magnetic material; a plunger member, of magnetic material, mounted for attraction toward said stop member; and a coil arranged and adapted, upon passage of current therethrough, to effect said attraction of the plunger member; said member having surfaces interengageable when the plunger member is attracted—the improvement consisting in that said interengageable surfaces of the members define, respectively, a substantially hemispherical protuberance and a socket for receiving said protuberance and conforming thereto in curvature. . . .

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D.C.

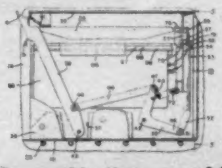
Week of Jan. 14

2,819,580. VENTILATED SUIT REFRIGERATION UNIT. Frederick H. Green, Palos Verdes Estates, Calif., assignor to The Garrett Corp., Los Angeles, Calif.



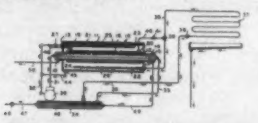
6. A refrigeration system for supplying cooled air to a first enclosure and to a second substantially airtight enclosure disposed within said first enclosure, said system comprising a heat exchanger for cooling a supply of hot compressed air, an expansion turbine connected to said heat exchanger for further cooling and reducing the pressure of a portion of the cooled air, means connected to said heat exchanger and to said expansion turbine for combining predetermined portions of the cooled air from said heat exchanger and of the further cooled air from said expansion turbine and for supplying said predetermined portions to said first enclosure. . . .

2,819,591. ICE BLOCK HARVESTING APPARATUS. Edgar C. Robbins, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. In combination, a refrigerator cabinet having a chamber therein, a refrigerating system associated with said cabinet including an evaporator for cooling said chamber to a temperature below 32° F., a box-like member forming a compartment having a freezing device receiving opening, opposed spaced apart stationary parallel supports in said box-like member adjacent the opening therein, a socket element within said compartment and having one side thereof pivotally mounted upon said box-like element for movement relative thereto and to said supports, a stop on said box-like member at the other side of said socket element and normally engaged thereby, a unitary freezing device disposed in said chamber. . . .

2,819,592. ACCUMULATOR HEAT EXCHANGER. Sterling P. Smith, Washington, D. C.



1. For use with a refrigeration system having a compressor, condenser, and evaporator, an accumulator heat exchanger comprising a central conduit for the passage of compressed refrigerant, said central conduit being provided for passing refrigerant from the compressor to the condenser, said condenser being fluid cooled, a first shell about said central conduit for the passage of said cooling fluid leaving the condenser, inlet and outlet connections in said first shell for said cooling fluid. . . .

2,819,593. FREEZER LINER AND METHOD OF MAKING SAME. Harold Smith, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa.

2. A liner assembly for chest type freezer cabinets comprising a two depth liner compartment having an upwardly flanged one piece stepped bottom pan and a pair of abutting U-shaped wall portions secured to said flange to provide a deep compartment portion and a shallow compartment portion, means for securing evapora-

(Continued on next page)

NO FLOOR DRAIN?

INSTALLING AIR CONDITIONER ICE CUBE BIN DRINKING FOUNTAINS

BUY THE BEST

KESCO

AUTOMATIC CONDENSATE WATER DISPOSAL **PUMPS**

1/30 H.P. to 1/3 H.P.
10 ft. to 50 ft. Head
At Your Wholesaler

Custom-Temp AIR CONDITIONING EQUIPMENT

SERIES I — WATER COOLED, SELF CONTAINED
DE LUXE & UTILITY MODELS
5-15 H.P. IN STOCK

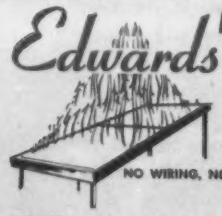
Performance Packed Packages

Manufactured by

CUSTOM-TEMP CORP., LIBERTY, NEW YORK

INQUIRIES FROM CONTRACTORS AND CONSULTING ENGINEERS INVITED

Edwards NEW airvec

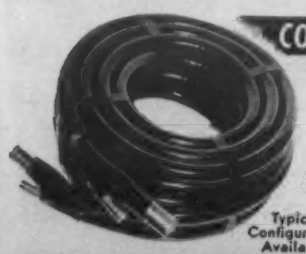


The Fanless .. Noiseless .. Air-Cooled Condenser

NO WIRING, NO NOISE, NO OPERATING EXPENSE, NO MOTORS, NO MAINTENANCE

AIR VEC - a new principle in air conditioning. So new, so revolutionary that all other condenser types are made obsolete. Manufactured in 2, 3 and 5 ton capacities, and larger. Available to handle any capacity desired as larger installations are assembled from basic units. WRITE AIR VEC DEPT., EDWARDS ENGINEERING CORP.

DEVELOPED BY MANUFACTURER OF INDUSTRY'S MOST WIDELY USED WATER-COOLED CONDENSERS.



Typical Configuration Available

CO-AXIAL FREON CONDENSERS

with these advantages:

- COST REDUCED 30% TO 40%
- CONDENSER WATER REDUCED 35%
- Refrigerant Charge Reduced
- Stabilizes Capillary Performance
- Smaller Cooling Towers Required
- Shipping Weight Reduced
- Many Shapes and Sizes Available (1 to 7½ tons)

EDWARDS ENGINEERING CORP.

103 ALEXANDER AVENUE • POMPTON PLAINS, NEW JERSEY

Telephone TERHUNE 5-2809

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

ATTENTION AIR conditioning dealers: Can you use an expert service engineer? Age 39, married. For the past 10 years service and construction supervisor for a large Carrier distributor. Also chief trouble shooter. My work is done with a minimum of engineering help. Available soon. BOX A6007, Air Conditioning & Refrigeration News.

SENIOR PROJECT or chief engineer—An aggressive self-starter, full of initiative & enthusiasm for broader engineering or manufacturing responsibilities. Seventeen years' experience handling engineering & manufacturing problems. 5 years of which have been design & product engineering of refrigeration & air conditioning systems, especially heat pumps. BOX A6008, Air Conditioning & Refrigeration News.

TWELVE YEARS' experience with manufacturers of residential, commercial air conditioning and heating equipment as district manager and sales manager for factory branch. Sales application, advertising and promotional training all of broad and valuable experience with adaptability, flexibility and loyalty as additional assets. Willing to relocate to become associated with progressive manufacturer or distributor. Age 32, presently employed. BOX A6009, Air Conditioning & Refrigeration News.

YOUNG SALES executive available. Although only 36, this young man has sales management, financial, and engineering experience. Has consistently earned five figure income in last seven years. Will consider investing to $20,000 for a part ownership in right opportunity. Will re-locate. BOX A6010, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

SALES ENGINEER wanted at home office for air conditioning and refrigeration application engineering, principally in O.E.M. field. Graduate engineer with previous experience preferred. Send resume and salary requirements to BOHN ALUMINUM & BRASS CORPORATION, Betz Division, 1625 East Voorhees Street, Danville, Illinois, Attention: sales manager. Replies will be held in confidence.

MANUFACTURER'S REPRESENTATIVE wanted for central vacuum cleaning systems for residential use. Has tremendous suction, nearly 1-¾ H.P., reverse flow for spraying and rug cleaning. Competitively priced. Want agents who sell dealers who supply builders such as air conditioning contractors. Write BOX 12372, Dallas 20, Texas.

COMMERCIAL REFRIGERATION engineer with at least ten years' experience, age 30-35. Opportunity to assume management of commercial refrigeration dept. of national coil company, Chicago location. Give experience details & salary desired. Mr. J. O'Connor, PEERLESS OF AMERICA, INC., 5900 N. Pulaski Road, Chicago 46.

MANUFACTURER'S REPRESENTATIVE who is now calling on architects, kitchen equipment firms, and restaurant supply houses. An excellent market is developing in the food serving industry for our push-thru refrigerator. Nothing quite like it. Also complete line of walk-ins, reach-ins, pass-thru, and sliding doors refrigerated. New England open, protected territory. Must have a following. BOX A5994, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

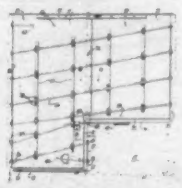
LATEST STYLE 57 production 1 h.p. 230 V. single phase 50/60 cy. Freon-12 hermetic compressors Model A81T16 air conditioning HBP. Complete with Klixon overload, relay, starting and running capacitor, $59.00 ea. Send for free circulars and bulletins on air conditioning and refrigeration values. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

FOR IMMEDIATE shipment: 1957 models. Motor compressor units 3 hp, single and three phase—$75.00 Each. 5 hp, three phase—$125.00 Each. BERNARD M. PACKTOR COMPANY, 228 Boulevard, New Haven, Connecticut.

PATENTS

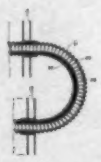
(Continued from preceding page)

tor tubing in continuous coils about said wall portions and second means



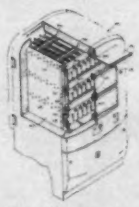
for securing at least one of said coils to the bottom pan under the shallow compartment portion as it passes around the deep portion.

2,819,731. REFRIGERATING APPARATUS. Chester F. Louthan, Union, Ohio, assignor to General Motors Corp., Detroit, Mich.



A return bend construction for use in a heat exchanger comprising in combination, a fluid conveying conduit having a plurality of spaced apart substantially parallel and arcuate wall portions, a divider element interposed between said wall portions and comprising a single strip of metal arranged in zigzag form to provide a plurality of internal fins extending between said spaced apart portions of said conduit and disposed in intimate thermal contact therewith, each of said walls and said divider element having registering transversely extending corrugations, said corrugations being closer together at the inside of each return bend than at the outside of the return bend.

2,819,815. BOTTLE VENDING MACHINE. Owen L. Stumbaugh, Charlestown, W. Va., assignor to Victor Products Corp., Hagerstown, Md.



1. In a bottle vending machine parallel guides defining therebetween ways along which move bottles, spaced rows of abutting bolts carried by the guides for movement transversely thereof and projection into the ways to define stops between which must pass the bottles as they are extracted from between the guides. . . .

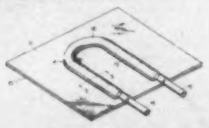
2,819,944. TEMPERATURE AND RELATIVE HUMIDITY CONTROLLER DEVICE FOR AIR CONDITIONING APPARATUS. Kenneth B. Dennick, New York, N. Y.

1. A combined temperature and relative humidity setting and controller device for use with air conditioners in the selection and maintenance thereby of the desired temperature and relative humidity conditions, said device comprising a pair of pressure-responsive regulator members; a pair of screws respectively bearing thereon for setting the members; a pair of interconnected rotatable means associated respectively with the pair of setting screws, one means being rotatable with its setting screw. . . .

2,819,983. PRESSURE-WELDED TUBING TURN. Perry J. Bieppel, Worthington, and Melvin C. Clapp and Edwin G. Elliott, Jr., Columbus, Ohio, assignors, by mesne assignments, to The Metal Specialty Co., Cincinnati, Ohio, a corporation of Ohio.

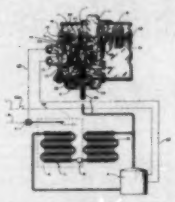
1. In a pressure-welded heat-exchange unit, formed from a pair of sheets of aluminum or pressure-weldable aluminum alloy, a tubing formed in one of said sheets, said one sheet being about 0.04 inch thick, said tubing being substantially semicircular in cross section and having a radius of about $\frac{5}{16}$ inch, a curved section in said tubing, said curved section having a radius of about 1 inch measured from the center line of said tubing.

2,819,884. PRESSURE-WELDED TUBING. Perry J. Bieppel, Worthington, and Melvin C. Clapp and Edwin G. Elliott, Jr., Columbus, Ohio, assignors, by mesne assignments, to The Metal Specialty Co., Cincinnati, Ohio, a corporation of Ohio.



1. In a heat-exchange unit formed from a pair of sheets of aluminum or a pressure-weldable aluminum alloy substantially 0.04 inch in thickness, a tubing formed in one of said sheets and having an outside cross-sectional radius of about $\frac{3}{16}$ inch, transitional cross-sectional radii of about $\frac{1}{8}$ inch, a total over-all width of about 0.6 inch, and a continuous pressure weld adjacent said tubing, welding said sheets together.

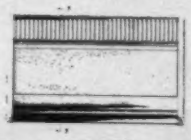
2,820,121. CONTROL APPARATUS. Frederick A. Greenawalt, Columbus, Ohio, assignor to Ranco Inc., Columbus, Ohio.



4. In a control apparatus comprising a control device and a pressure-responsive element for actuating said device from one control position to another, the combination of means operatively inter-connecting said element and device comprising an oscillatable member movable by said element in one direction in response to an increase in pressure, means biasing said member in the opposite direction, a cam surface on said member. . . .

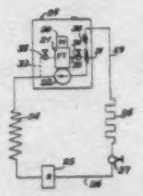
DESIGNS

181,911. AIR CONDITIONER CABINET FRONT OR SIMILAR ARTICLE. Jean O. Reinecke, Oak Park, Ill., assignor to Amana Refrigeration, Inc., Amana, Iowa, a corporation of Iowa.



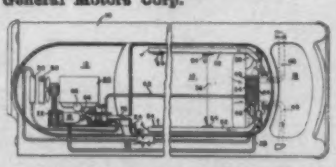
Week of Jan. 21

2,820,350. REFRIGERATION APPARATUS. Herman E. Sheets, Akron, Ohio.



1. A closed circuit fluid refrigeration apparatus comprising a turbo-machinery type compressor including a fluid transmission; circuit means including a condenser connected to the outlet of said compressor; a receiver connected to said condenser for receiving and storing refrigerant liquid; an evaporator, and an expansion device connecting said receiver to said evaporator for expansion of refrigerant therein. . . .

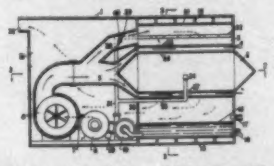
2,820,351. REFRIGERATING APPARATUS FOR AN AUTOMOBILE. John Dolza, Davisburg, and Ronald C. Wilson, Royal Oak, Mich., assignors to General Motors Corp.



1. In combination with an automobile having a passenger compartment; air conditioning apparatus for said passenger compartment comprising a compressor, an evaporator, and condensing means; refrigerant flow connections between said compressor, evaporator, and condensing means; means for circulating air for said passenger compartment in thermal exchange relationship with said evaporator; means for exhausting air from said passenger compartment. . . .

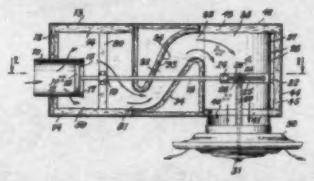
2,820,353. HUMIDITY AND TEMPERATURE REGULATING AIR CONDITIONER. Charles Ashley Vincent Priest, Tennant Creek, Northern Territory, Australia, assignor to one-half to Leonard James Kittle, Tennant Creek, Northern Territory, Australia.

1. A humidity and temperature regulating air conditioner comprising an air pre-cooler duct and an evaporation chamber and a heat exchange duct all arranged consecutively around a heat



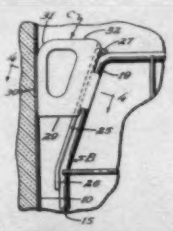
exchange chamber, a blower with its intake end connected with said air pre-cooler duct and its outlet end connected with said heat exchange duct. . . .

2,820,406. NOISE REDUCTION MEANS FOR AIR OUTLET DEVICES. Peter A. Argentieri, Danbury, Conn., assignor to Connor Engineering Corp., Danbury, Conn.



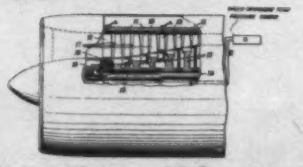
1. A noise-reduction means for connection to the outlet of an air duct comprising, a housing lined with sound-absorbing material, said housing having an inlet chamber into which air enters, a sinuous passage leading from said chamber, a second chamber within the housing and spaced from the first chamber, the second chamber having side walls, end walls and top and bottom walls the sinuous passage being located in the space between the chambers. . . .

2,820,567. LOCKING WEDGE FOR FREEZER DIVIDERS. Edmund J. Buzicky, St. Paul, Minn., assignor, by mesne assignments, to Whirlpool Corp.



9. A divider for chest type freezers including a frame designed to extend transversely of the freezer chest having the uppermost ends of its sides including upwardly and inwardly, a pair of inclined strips supported near the upper end of said divider, said strips inclining downwardly and outwardly toward opposte walls of the freezer chest in conformance with the inclination of said frame sides. . . .

2,820,582. AXIAL FLOW COMPRESSORS. Alfred John Penn, Northwood, and Leslie Alan Nevard, Liverpool, England, assignors to D. Napier & Son Limited, London, England, a British company.

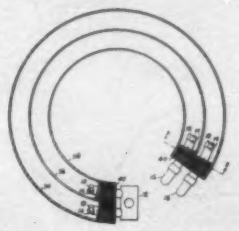


1. A multi-stage axial flow compressor for compressing a gaseous medium comprising a first rotor part, blades for the first compression part mounted on said first rotor part, a second rotor part, driving means for imparting rotation to said second rotor part, means supporting said first rotor part for rotation independently of said second rotor part and said driving means, blades for the later compression stages mounted on said second rotor part. . . .

2,820,615. HEAT EXCHANGER. Melville F. Peters, Livingston, N. J.

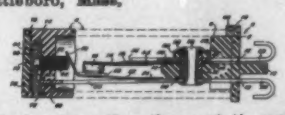
1. A heat exchanger assembly comprising a pipe, a flat, elongate strip of metallic material of a thickness to impart inherent flexibility thereto helically wrapped about said pipe, an elongate conduit element extending longitudinally and coextensively with said strip and rigidly fixed in intimate contact to the outer surface thereof. . . .

2,820,617. HEAT EXCHANGER. Albert O. Tadewald, La Crosse, Wis., assignor to The Trane Co., La Crosse, Wis.



1. A heat exchanger comprising a supply header and a discharge header, conduit extending in fluid communication with said supply header and said discharge header for conducting heat exchange fluid from said supply header to said discharge header, corrugated fins of sheet material having crests and troughs, recesses in the crests of said corrugations, said recesses being shaped to fit the outside surface of the conduit. . . .

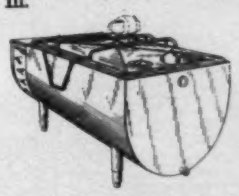
2,820,870. THERMOSTATIC SWITCH. Walter H. Moksu, Attleboro, Mass., assignor to Metals & Controls Corp., Attleboro, Mass.



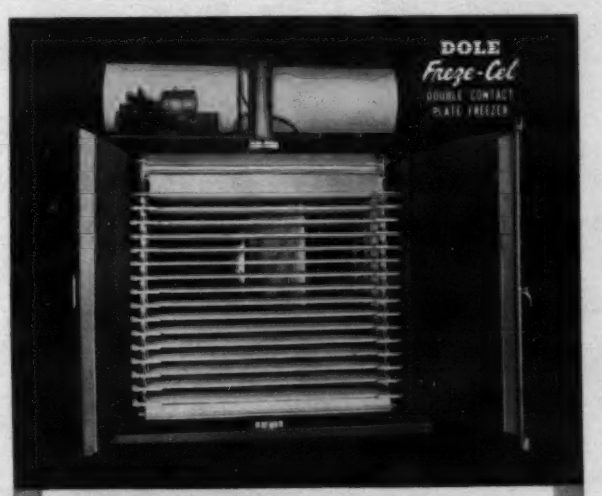
1. A snap-acting thermostatic switch including a mounting member; an elongated thermostatic element in strip form lying along one side of said member with one end thereof overhanging said member and having a part thereof dished to provide a snap-acting portion, said dished part lying beyond the end of said mounting member; a restraining member lying on top of said element and extending over a portion of the dished area of said element. . . .

DESIGNS

181,940. COOLING TANK. Maurice J. Moulthrop, Oak Park, Ill., assignor to The Creamery Package Mfg. Co., Chicago, Ill.



(The End)



Faster Freezing of Packaged Foods!

- Convenient "pass-through" operation
- Patented square tube Vacuum Cold Plates
- Available with or without cabinet

DOLE REFRIGERATING COMPANY
5920 NORTH PULASKI ROAD, CHICAGO 46, ILLINOIS
103 PARK AVENUE, NEW YORK 17, N. Y.
Dole Refrigerating Products Limited, 44 Elgin Street, Brantford, Ont.

Write for Engineering Catalog FE

Freze-Cel DOUBLE CONTACT PLATE FREEZER

DOLE THE Cel LINE

CUT YOUR FILTER INVENTORY

One size fits all makes with

FREE-FLOW FILTER

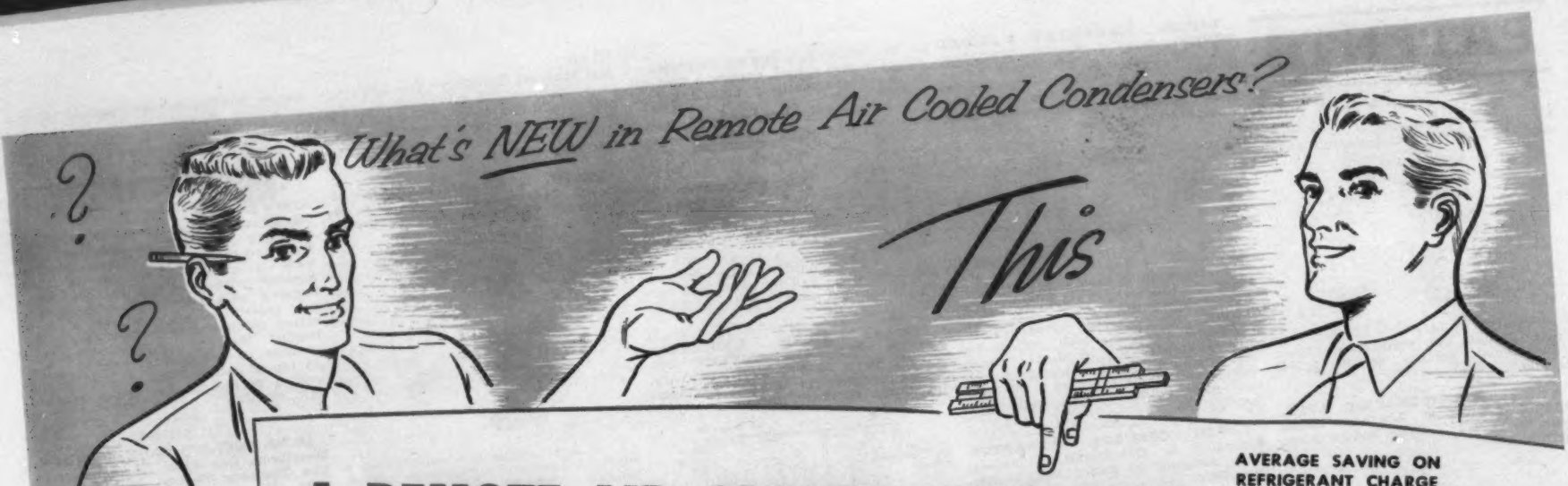
WICKFORD PRODUCTS INC.
New York 13, New York

Will Pay Cash For ROOM - AUTO PACKAGE Units in Original Crates

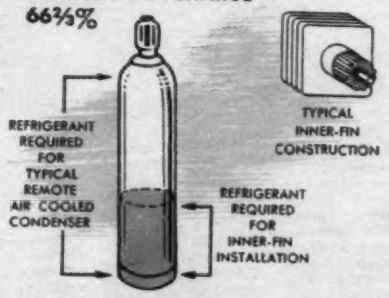
THERMAL CONTROL CO.

2500 W. Sixth St., Los Angeles 57, Calif.

DUnkirk 3-4341



A REMOTE AIR COOLED CONDENSER THAT REQUIRES ONLY 1/3 OF THE REFRIGERANT CHARGE USED BY COMPETITIVE MODELS


AVERAGE SAVING ON REFRIGERANT CHARGE 66⅔%
REFRIGERANT REQUIRED FOR TYPICAL REMOTE AIR COOLED CONDENSER
TYPICAL INNER-FIN CONSTRUCTION
REFRIGERANT REQUIRED FOR INNER-FIN INSTALLATION

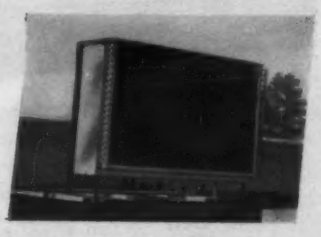
A RECENT 300 TON JOB SHOWED SAVINGS OF 1800 LBS. OF REFRIGERANT THROUGH USE OF THESE UNITS.

Yes, the Dunham-Bush 'BC' Remote Air Cooled Condensers with famous Inner-Fin construction mean savings of 67% in refrigerant charge. Additionally, they mean smaller receivers and minimum loss if the system charge is lost.

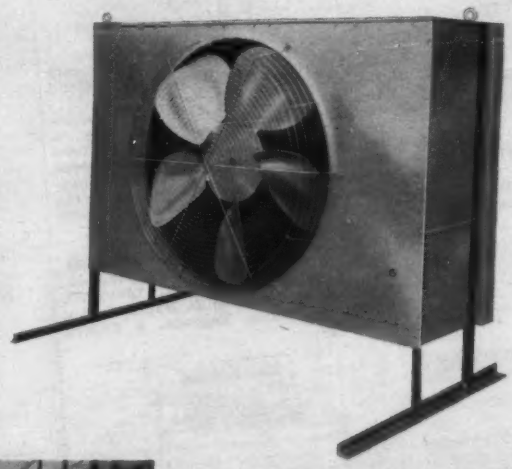
In these expertly planned units, the exclusive Inner-Fin construction diminishes the internal volume of the coil while increasing the heat transfer coefficient.

And higher heat transfer factors permit design of more compact units, saving valuable space in installation.

AS MUCH AS 53.5 TON CAPACITY IN ONE UNIT



The Dunham-Bush line of 'BC' Remote Air Cooled Condensers includes models in 13 sizes with capacities ranging from 2.2 tons to 53.5 tons, making possible use of a single unit for practically any job!



FOR ALL 'ROUND PROTECTION

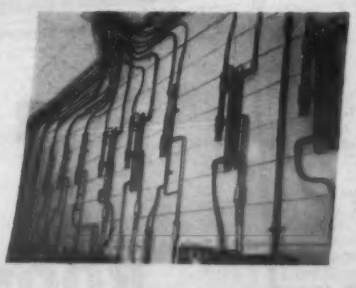
Plastic vinyl paint is applied to all ferrous parts of unit casing and structure in three stages:

PRIMER—a polyvinyl plastic combined with zinc chromate.

INTERMEDIATE—a vinyl resin with high lead content.

FINISH—hard grey, all weather resistant plastic vinyl.

All interior surfaces of the unit casing are given an extra finish coat of plastic vinyl.



AND FOR MAINTAINING SATISFACTORY HEAD PRESSURES

at all ambients, Dunham-Bush engineers offer the 'PS' Pressure Stabilizer.

'PS' units can be mounted indoors near the compressor, facilitating the making of necessary adjustments. They are thoroughly factory tested and assembled, and require connection only to the refrigerant liquid and discharge lines. No extra piping or special loops required. Regulating valve gives smooth pressure control and eliminates wide pressure fluctuations inherent in other head control systems.

The name Dunham-Bush is synonymous with efficient, satisfactory service for all types of pressure and temperature conditions. For technical assistance, our engineering staff is at your service. For more information, contact us.

Dunham-Bush, Inc.

WEST HARTFORD 10 • CONNECTICUT • U. S. A.

MICHIGAN CITY, INDIANA • MARSHALLTOWN, IOWA • RIVERSIDE, CALIFORNIA • BRUNNER DIVISION, UTICA, NEW YORK

SUBSIDIARIES

HEAT-X, INC., BREWSTER, N.Y.
THE BRUNNER CO., GAINESVILLE, GA.
DUNHAM-BUSH (CANADA), LTD., TORONTO, CANADA
DUNHAM-BUSH, LTD., LONDON, ENGLAND
BRUNNER CORPORATION (CANADA) LTD., PORT HOPE, ONTARIO

DUNHAM-BUSH
heat-x
BRUNNER SINCE 1906